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<120> Novel method and composition

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<170> Patentin version 3.5

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Gly Leu Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu
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Gln Pro Ser Leu Gln Thr Gly Ser Glu Glu Leu Arg Ser Leu Tyr Asn
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Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp
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Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys
            100                 105                 110

Lys Lys Ala Gln Gln Ala Ala Ala Asp Thr Gly His Ser Asn Gln Val
        115                 120                 125

Ser Gln Asn Tyr Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His
    130                 135                 140

Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Val Glu
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Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
                165                 170                 175

Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly
            180                 185                 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Glu Thr Ile Asn Glu Glu
        195                 200                 205

Ala Ala Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala
    210                 215                 220

Pro Gly Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225                 230                 235                 240

Ser Thr Leu Gln Glu Gln Ile Gly Trp Met Thr Asn Asn Pro Pro Ile
                245                 250                 255

Pro Val Gly Glu Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
            260                 265                 270

Ile Val Arg Met Tyr Ser Pro Thr Ser Ile Leu Asp Ile Arg Gln Gly
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Leu Leu Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Lys Ala
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Leu Gly Pro Ala Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
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Val Gly Gly Pro Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser
        355                 360                 365

Pro Ile Glu Thr Val Pro Val Lys Leu Lys Pro Gly Met Asp Gly Pro
    370                 375                 380

Lys Val Lys Gln Trp Pro Leu Thr Glu Glu Lys Ile Lys Ala Leu Val
385                 390                 395                 400

Glu Ile Cys Thr Glu Met Glu Lys Glu Gly Lys Ile Ser Lys Ile Gly
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Pro Glu Asn Pro Tyr Asn Thr Pro Val Phe Ala Ile Lys Lys Lys Asp
            420                 425                 430

Ser Thr Lys Trp Arg Lys Leu Val Asp Phe Arg Glu Leu Asn Lys Arg
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Thr Gln Asp Phe Trp Glu Val Gln Leu Gly Ile Pro His Pro Ala Gly
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Leu Lys Lys Lys Lys Ser Val Thr Val Leu Asp Val Gly Asp Ala Tyr
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Phe Ser Val Pro Leu Asp Glu Asp Phe Arg Lys Tyr Thr Ala Phe Thr
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Ile Pro Ser Ile Asn Asn Glu Thr Pro Gly Ile Arg Tyr Gln Tyr Asn
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Val Leu Pro Gln Gly Trp Lys Gly Ser Pro Ala Ile Phe Gln Ser Ser
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Met Thr Lys Ile Leu Glu Pro Phe Arg Lys Gln Asn Pro Asp Ile Val
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Ile Tyr Gln Tyr Met Asp Asp Leu Tyr Val Gly Ser Asp Leu Glu Ile
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Leu Lys Met Gly Tyr Gln Leu His Pro Asp Lys Trp Thr Val Gln Pro
        595                 600                 605

Ile Val Leu Pro Glu Lys Asp Ser Trp Thr Val Asn Asp Ile Gln Lys
    610                 615                 620

Leu Val Gly Lys Leu Asn Trp Ala Ser Gln Ile Tyr Pro Gly Ile Lys
625                 630                 635                 640

Val Arg Gln Leu Cys Lys Leu Leu Arg Gly Thr Lys Ala Leu Thr Glu
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Val Ile Pro Leu Thr Glu Glu Ala Glu Leu Glu Leu Ala Glu Asn Arg
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Glu Ile Leu Lys Glu Pro Val His Gly Val Tyr Tyr Asp Pro Ser Lys
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Asp Leu Ile Ala Glu Ile Gln Lys Gln Gly Gln Gly Gln Trp Thr Tyr
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Gln Ile Tyr Gln Glu Pro Phe Lys Asn Leu Lys Thr Gly Lys Tyr Ala
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Arg Met Arg Gly Ala His Thr Asn Asp Val Lys Gln Leu Thr Glu Ala
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Val Gln Lys Ile Thr Thr Glu Ser Ile Val Ile Trp Gly Lys Thr Pro
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Lys Phe Lys Leu Pro Ile Gln Lys Glu Thr Trp Glu Thr Trp Trp Thr
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Glu Tyr Trp Gln Ala Thr Trp Ile Pro Glu Trp Glu Phe Val Asn Thr
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Pro Pro Leu Val Lys Leu Trp Tyr Gln Leu Glu Lys Glu Pro Ile Val
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850 855 860

Gln Tyr Ala Leu Gly Ile Ile Gln Ala Gln Pro Asp Gln Ser Glu Ser
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Glu Leu Val Asn Gln Ile Ile Glu Gln Leu Ile Lys Lys Glu Lys Val
885 890 895

Tyr Leu Ala Trp Val Pro Ala His Lys Gly Ile Gly Gly Asn Glu Gln
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Val Asp Lys Leu Val Ser Ala Gly Ile Arg Lys Val Leu Met Val Gly
915 920 925

Phe Pro Val Thr Pro Gln Val Pro Leu Arg Pro Met Thr Tyr Lys Ala
930 935 940

Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly Leu Glu Gly
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Leu Ile His Ser Gln Arg Arg Gln Asp Ile Leu Asp Leu Trp Ile Tyr
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His Thr Gln Gly Tyr Phe Pro Asp Trp Gln Asn Tyr Thr Pro Gly Pro
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Gly Val Arg Tyr Pro Leu Thr Phe Gly Trp Cys Tyr Lys Leu Val Pro
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Val Glu Pro Asp Lys Val Glu Glu Ala Asn Lys Gly Glu Asn Thr
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Ser Leu Leu His Pro Val Ser Leu His Gly Met Asp Asp Pro Glu
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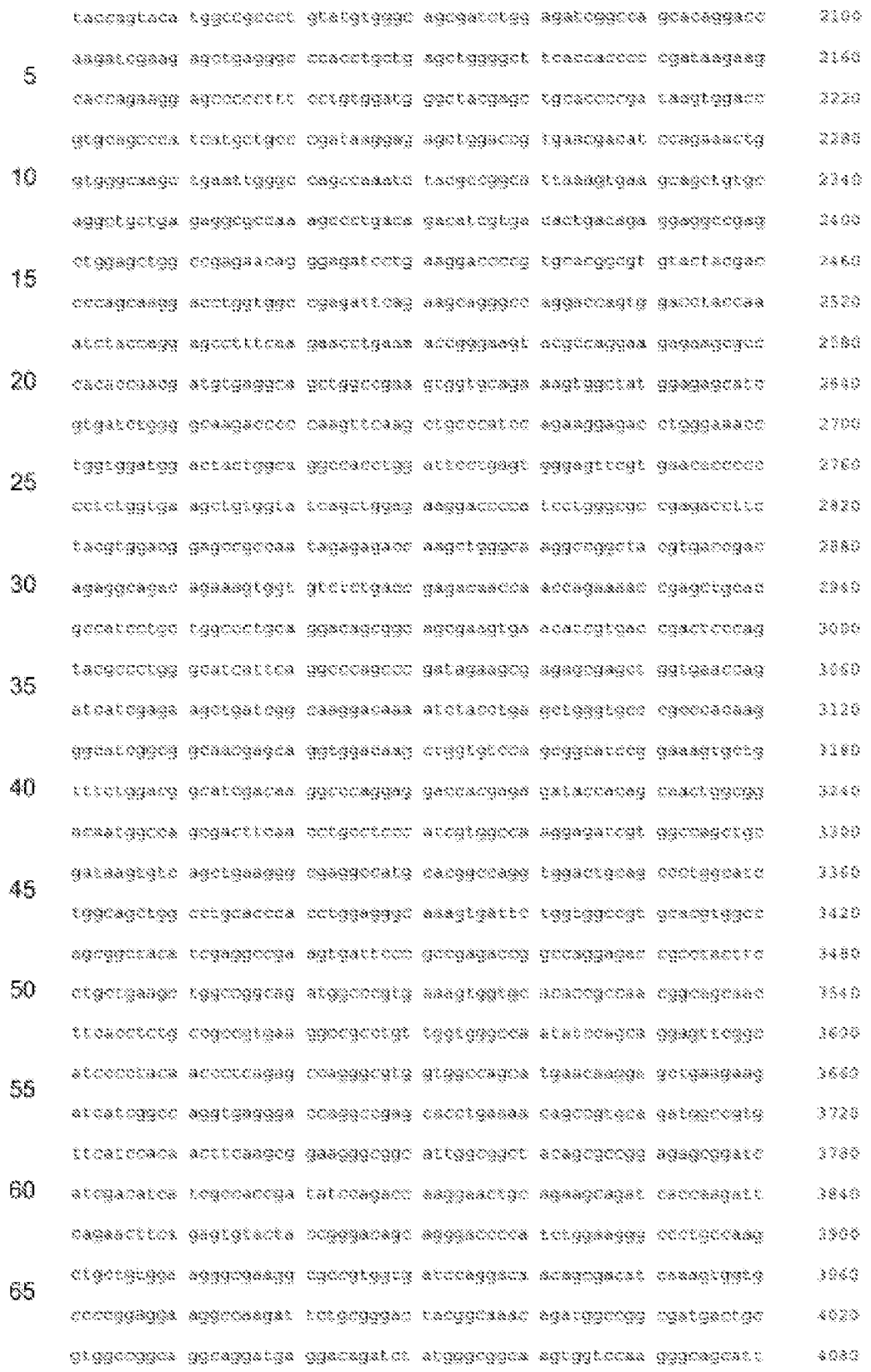

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35 40 45

Ser Leu Leu Glu Thr Thr Glu Gly Cys Gln Gln Ile Met Asn Gln Leu
50 55 60

Gln Pro Ala Val Lys Thr Gly Thr Glu Glu Ile Lys Ser Leu Phe Asn
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Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Asp Val Lys Asp
85 90 95

Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Ile Gln Asn Lys Ser Lys
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Gln Lys Thr Gln Gln Ala Ala Ala Asp Thr Gly Asp Ser Asn Lys Val
115 120 125

Ser Gln Asn Tyr Pro Ile Ile Gln Asn Ala Gln Gly Gln Met Ile His
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Gln Asn Leu Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu
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Glu Gly Ala Thr Pro Gln Asp Leu Asn Val Met Leu Asn Ile Val Gly
            180                 185                 190

Gly His Gln Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu
        195                 200                 205

Ala Ala Glu Trp Asp Arg Leu His Pro Val Gln Ala Gly Pro Ile Pro
    210                 215                 220

Pro Gly Gln Ile Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr
225                 230                 235                 240

Ser Thr Pro Gln Glu Gln Leu Gln Trp Met Thr Gly Asn Pro Pro Ile
                245                 250                 255

Pro Val Gly Asn Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys
            260                 265                 270

Ile Val Arg Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Lys Gln Gly
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Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Ala Leu
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Arg Ala Glu Gln Ala Thr Gln Asp Val Lys Gly Trp Met Thr Glu Thr
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Leu Gly Ser Gly Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly
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Val Gly Gly Pro Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser
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Gln Lys Arg Ile Lys Cys Phe Asn Cys Gly Lys Glu Gly His Leu Ala
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Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu
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Val Pro Pro Leu Val Ser Leu Lys Ser Leu Phe Gly Asn Asp Pro Leu
485 490 495

Ser Gln Gly Ser Pro Ile Ser Pro Ile Glu Thr Val Pro Val Thr Leu
500 505 510

Lys Pro Gly Met Asp Gly Pro Lys Val Lys Gln Trp Pro Leu Thr Glu
515 520 525

Glu Lys Ile Lys Ala Leu Thr Glu Ile Cys Thr Glu Met Glu Lys Glu
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Arg Lys Tyr Thr Ala Phe Thr Ile Pro Ser Thr Asn Asn Glu Thr Pro
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Gly Val Arg Tyr Gln Tyr Asn Val Leu Pro Gln Gly Trp Lys Gly Ser
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Pro Ala Ile Phe Gln Ser Ser Met Thr Lys Ile Leu Glu Pro Phe Arg
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Ser Lys Asn Pro Glu Ile Ile Ile Tyr Gln Tyr Met Ala Ala Leu Tyr
675 680 685

Val Gly Ser Asp Leu Glu Ile Gly Gln His Arg Thr Lys Ile Glu Glu
690 695 700

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Asp Lys Trp Thr Val Gln Pro Ile Met Leu Pro Asp Lys Glu Ser Trp
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Thr Val Asn Asp Ile Gln Lys Leu Val Gly Lys Leu Asn Trp Ala Ser
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Gln Ile Tyr Ala Gly Ile Lys Val Lys Gln Leu Cys Arg Leu Leu Arg
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Gly Ala Lys Ala Leu Thr Asp Ile Val Thr Leu Thr Glu Glu Ala Glu
785 790 795 800

Leu Glu Leu Ala Glu Asn Arg Glu Ile Leu Lys Asp Pro Val His Gly
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Val Tyr Tyr Asp Pro Ser Lys Asp Leu Val Ala Glu Ile Gln Lys Gln
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Gly Gln Asp Gln Trp Thr Tyr Gln Ile Tyr Gln Glu Pro Phe Lys Asn
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Leu Lys Thr Gly Lys Tyr Ala Arg Lys Arg Ser Ala His Thr Asn Asp
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Val Arg Gln Leu Ala Glu Val Val Gln Lys Val Ala Met Glu Ser Ile
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Val Ile Trp Gly Lys Thr Pro Lys Phe Lys Leu Pro Ile Gln Lys Glu
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Arg Gly Arg Gln Lys Val Val Ser Leu Thr Glu Thr Thr Asn Glu Lys
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Lys Leu Ile Gly Lys Asp Lys Ile Tyr Leu Ser Trp Val Pro Ala
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His Lys Gly Ile Gly Gly Asn Glu Gln Val Asp Lys Leu Val Ser
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Ser Gly Ile Arg Lys Val Leu Phe Leu Asp Gly Ile Asp Lys Ala
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Gln Glu Asp His Glu Arg Tyr His Ser Asn Trp Arg Thr Met Ala
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Ser Cys Asp Lys Cys Gln Leu Lys Gly Glu Ala Met His Gly Gln
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Glu Gly Lys Val Ile Leu Val Ala Val His Val Ala Ser Gly Tyr
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Ile Glu Ala Glu Val Ile Pro Ala Glu Thr Gly Gln Glu Thr Ala
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Tyr Phe Leu Leu Lys Leu Ala Gly Arg Trp Pro Val Lys Val Val
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    1175                1180                1185

Ala Cys Trp Trp Ala Asn Ile Gln Gln Glu Phe Gly Ile Pro Tyr
    1190                1195                1200

Asn Pro Gln Ser Gln Gly Val Val Ala Ser Met Asn Lys Glu Leu
    1205                1210                1215

Lys Lys Ile Ile Gly Gln Val Arg Asp Gln Ala Glu His Leu Lys
    1220                1225                1230
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Thr Ala Val Glu Met Ala Val Phe Ile His Asn Phe Lys Arg Lys
1235                1240                1245

Gly Gly Ile Gly Gly Tyr Ser Ala Gly Glu Arg Ile Ile Asp Ile
1250                1255                1260

Ile Ala Thr Asp Ile Gln Thr Lys Glu Leu Glu Lys Gln Ile Thr
1265                1270                1275

Lys Ile Gln Asn Phe Arg Val Tyr Tyr Arg Asp Ser Arg Asp Pro
1280                1285                1290

Ile Trp Lys Gly Pro Ala Lys Leu Leu Trp Lys Gly Glu Gly Ala
1295                1300                1305

Val Val Ile Gln Asp Asn Ser Asp Ile Lys Val Val Pro Arg Arg
1310                1315                1320

Lys Ala Lys Ile Leu Arg Asp Tyr Gly Lys Gln Met Ala Gly Asp
1325                1330                1335

Asp Cys Val Ala Gly Arg Gln Asp Glu Asp Arg Ser Met Gly Gly
1340                1345                1350

Lys Trp Ser Lys Gly Ser Ile Val Gly Trp Pro Glu Ile Arg Glu
1355                1360                1365

Arg Met Arg Arg Ala Pro Ala Ala Ala Pro Gly Val Gly Ala Val
1370                1375                1380

Ser Gln Asp Leu Asp Lys His Gly Ala Ile Thr Ser Ser Asn Ile
1385                1390                1395

Asn Asn Pro Ser Cys Val Trp Leu Glu Ala Gln Glu Glu Glu Glu
1400                1405                1410

Val Gly Phe Pro Val Arg Pro Gln Val Pro Leu Arg Pro Met Thr
1415                1420                1425

Tyr Lys Gly Ala Phe Asp Leu Ser His Phe Leu Lys Glu Lys Gly
1430                1435                1440

Gly Leu Asp Gly Leu Ile Tyr Ser Arg Lys Arg Gln Glu Ile Leu
1445                1450                1455

Asp Leu Trp Val Tyr His Thr Gln Gly Tyr Phe Pro Asp Trp Gln
1460                1465                1470

Asn Tyr Thr Pro Gly Pro Gly Val Arg Tyr Pro Leu Thr Phe Gly
1475                1480                1485
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Trp Cys Phe Lys Leu Val Pro Met Glu Pro Asp Gln Val Glu Lys
1490 1495 1500

Ala Thr Glu Gly Glu Asn Asn Ser Leu Leu His Pro Ile Cys Gln
1505 1510 1515

His Gly Met Asp Asp Glu Glu Arg Gln Val Leu Ile Trp Lys Phe
1520 1525 1530

Asp Ser Arg Leu Ala Leu Lys His Arg Ala Gln Glu Leu His Pro
1535 1540 1545

Glu Phe Tyr Lys Asp Cys
1550

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<211> 2025
<212> DNA
<213> HIV

<400> 5
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gtgcctgtgt ggaaggatgc cgagaccacc ctgttctgcg ccagcgacgc caaggcctac 180

agcaccgaga agcacaatgt gtgggccacc cacgcctgcg tgcctaccga ccccaacccc 240

caggagatcc ccctggacaa cgtgaccgag gagttcaaca tgtggaagaa caacatggtg 300

gaccagatgc acgaggacat catcagcctg tgggaccaga gcctgaagcc ctgcgtgcag 360

ctgaccccac tgtgcgtgac cctgaactgc agcaacgtca gagtgaacgc cacctccaac 420

tccaccgagg acagggaggg catgaagaac tgcagcttca acatgaccac cgagctgcgg 480

gataagaagc agcaggtgta cagcctgttc taccggctgg acatcgagaa gatcaacagc 540

agcaacaaca acagcgagta ccggctgatc aactgcaaca ccagcgccat cacccaggcc 600

tgccccaagg tgaccttcga gcccatccca atccactact gcgccccagc cggcttcgcc 660

atcctgaagt gcaacgacaa cgagttcaac ggcaccggcc cctgcaacgt gagcaccgtg 720

gtgcagtgca cccacggcat caagcccgtg gtgtccaccc agctgctgct gaacggcagc 780

ctggccgaga gagaagtgcg gatcaggagc gagaacatcg ccaacaacgc caagaacatc 840

atcgtgcagt tgccagccgt cgtgaagatc aactgcatcc ggcctaacaa caatacccgg 900

aagagctaca gaatcggcca tggccaggcc ttctacgcca ccgacattgt gggcgacatc 960

agacaggcct actgcaacgt gtccaggacc gactggaacg acaccctgag actggtggcc 1020

aaccagctgc ggaagtactt cagcaacaag accatcatct tcaccaacag cagcggcgga 1080

gacctggaga tcaccaccca cagcttcaac tgtggcggcg agttcttcta ctgcaacacc 1140

tccggcctgt tcaatagcac ctggaacagc aacaacatgc aggagtccaa cgacaccagc 1200

aacggcacca tcaccctgcc ctgccggatc aagcagatca tcaacatgtg gcagcgcgtg 1260

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ggcctgatcc tgaccagaga tgggcggcaac aacaattccg ccaacgagac cttcagacct 1380

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agagccgtgg gcatcggcgc cgtgttcctg ggcttcctgg gagccgccgg atctacaatg 1560

ggagccgcca gcatcaccct gaccgtgcag gccagacagc tgctgagcgg catcgtgcag 1620

cagcagagca atctgctgag agccatcgag gcccagcagc agctgctgaa gctgacagtg 1680

tggggcatca agcagctgca ggcccagggt ctggccgtgg agagatacct gagggaccag 1740

cagctcctgg gcatctgggg ctgcagcggc aagctgatct gcaccaccac cgtgccctgg 1800

aatagcagct ggagcaacaa gagctacgac gacatctggg acaacatgac ctggctgcag 1860

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<210> 6
<211> 674
<212> PRT
<213> HIV

<400> 6

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Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Arg Asp Ala Glu
35 40 45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Ser Thr Glu Lys
50 55 60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
65 70 75 80

Gln Glu Ile Pro Leu Asp Asn Val Thr Glu Glu Phe Asn Met Trp Lys
85 90 95

Asn Asn Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
100 105 110

Gln Ser Leu Lys Pro Cys Val Gln Leu Thr Pro Leu Cys Val Thr Leu
115 120 125

Asn Cys Ser Asn Ala Arg Val Asn Ala Thr Phe Asn Ser Thr Glu Asp

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      130                 135                 140

Arg Glu Gly Met Lys Asn Cys Ser Phe Asn Met Thr Thr Glu Leu Arg
145                 150                 155                 160

Asp Lys Lys Gln Gln Val Tyr Ser Leu Phe Tyr Arg Leu Asp Ile Glu
                165                 170                 175

Lys Ile Asn Ser Ser Asn Asn Asn Ser Glu Tyr Arg Leu Val Asn Cys
            180                 185                 190

Asn Thr Ser Ala Ile Thr Gln Ala Cys Pro Lys Val Thr Phe Glu Pro
        195                 200                 205

Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys
    210                 215                 220

Asn Asp Thr Glu Phe Asn Gly Thr Gly Pro Cys Lys Asn Val Ser Thr
225                 230                 235                 240

Val Gln Cys Thr His Gly Ile Lys Pro Val Val Ser Thr Gln Leu Leu
                245                 250                 255

Leu Asn Gly Ser Leu Ala Glu Arg Glu Val Arg Ile Arg Ser Glu Asn
            260                 265                 270

Ile Ala Asn Asn Ala Lys Asn Ile Ile Val Gln Phe Ala Ser Pro Val
        275                 280                 285

Lys Ile Asn Cys Ile Arg Pro Asn Asn Asn Thr Arg Lys Ser Tyr Arg
    290                 295                 300

Ile Gly Pro Gly Gln Thr Phe Tyr Ala Thr Asp Ile Val Gly Asp Ile
305                 310                 315                 320

Arg Gln Ala His Cys Asn Val Ser Arg Thr Asp Trp Asn Asn Thr Leu
                325                 330                 335

Arg Leu Val Ala Asn Gln Leu Arg Lys Tyr Phe Ser Asn Lys Thr Ile
            340                 345                 350

Ile Phe Thr Asn Ser Ser Gly Gly Asp Leu Glu Ile Thr Thr His Ser
        355                 360                 365

Phe Asn Cys Gly Gly Glu Phe Phe Tyr Cys Asn Thr Ser Gly Leu Phe
    370                 375                 380

Asn Ser Thr Trp Thr Thr Asn Asn Met Gln Glu Ser Asn Asp Thr Ser
385                 390                 395                 400

Asn Gly Thr Ile Thr Leu Pro Cys Arg Ile Lys Gln Ile Ile Arg Met
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405 410 415

Trp Gln Arg Val Gly Gln Ala Met Tyr Ala Pro Pro Ile Glu Gly Val
420 425 430

Ile Arg Cys Glu Ser Asn Ile Thr Gly Leu Ile Leu Thr Arg Asp Gly
435 440 445

Gly Asn Asn Asn Ser Ala Asn Glu Thr Phe Arg Pro Gly Gly Gly Asp
450 455 460

Ile Arg Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val Val Lys
465 470 475 480

Ile Glu Pro Leu Gly Val Ala Pro Thr Arg Ala Lys Arg Arg Val Val
485 490 495

Glu Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val Phe Leu Gly Phe
500 505 510

Leu Gly Ala Ala Gly Ser Thr Met Gly Ala Ala Ser Ile Thr Leu Thr
515 520 525

Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Ser Asn
530 535 540

Leu Leu Arg Ala Ile Glu Ala Gln Gln Gln Leu Leu Lys Leu Thr Val
545 550 555 560

Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Val Glu Arg Tyr
565 570 575

Leu Arg Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly Lys Leu
580 585 590

Ile Cys Thr Thr Asn Val Pro Trp Asn Ser Ser Trp Ser Asn Lys Ser
595 600 605

Tyr Asp Asp Ile Trp Gln Asn Met Thr Trp Leu Gln Trp Asp Lys Glu
610 615 620

Ile Ser Asn Tyr Thr Asp Ile Ile Tyr Ser Leu Ile Glu Glu Ser Gln
625 630 635 640

Asn Gln Gln Glu Lys Asn Glu Gln Asp Leu Leu Ala Leu Asp Lys Trp
645 650 655

Ala Asn Leu Trp Asn Trp Phe Asp Ile Ser Lys Trp Leu Trp Tyr Ile
660 665 670

Arg Ser

<210> 7
<211> 1545
<212> DNA
<213> HIV

<400> 7
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gtacctgtgt ggaaagaagc aactaccact ctatttgtgt catcagatgc taaagcatat 180
gatacagagg tacataatgt ttgggccaca catgcctgtg tacccacaga ccccaacccc 240
caagaagtag tattgggaaa tgtgacagaa tatttttaca tgtggaaaaa taacatggta 300
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<210> 8
<211> 514
<212> PRT
<213> HIV

<400> 8

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Gly Thr Met Leu Leu Gly Met Leu Met Ile Cys Ser Ala Ala Glu Gln
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Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Thr
        35                  40                  45

Thr Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val
    50                  55                  60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
65                  70                  75                  80

Gln Glu Val Val Leu Gly Asn Val Thr Glu Tyr Phe Asn Met Trp Lys
                85                  90                  95

Asn Asn Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
            100                 105                 110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
        115                 120                 125

Asp Cys Asp Asp Val Asn Thr Thr Asn Ser Thr Thr Thr Thr Ser Asn
    130                 135                 140

Gly Trp Thr Gly Glu Ile Arg Lys Gly Glu Ile Lys Asn Cys Ser Phe
145                 150                 155                 160

Asn Ile Thr Thr Ser Ile Arg Asp Lys Val Gln Lys Glu Tyr Ala Leu
                165                 170                 175

Phe Tyr Asn Leu Asp Val Val Pro Ile Asp Asp Asp Asn Ala Thr Thr
            180                 185                 190

Lys Asn Lys Thr Thr Arg Asn Phe Arg Leu Ile His Cys Asn Ser Ser
        195                 200                 205

Val Met Thr Gln Ala Cys Pro Lys Val Ser Phe Glu Pro Ile Pro Ile
    210                 215                 220

His Tyr Cys Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys Asn Asn Lys
225                 230                 235                 240

Thr Phe Asp Gly Lys Gly Leu Cys Thr Asn Val Ser Thr Val Gln Cys
                245                 250                 255

Thr His Gly Ile Arg Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly
            260                 265                 270
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Ser Leu Ala Glu Glu Glu Val Val Ile Arg Ser Asp Asn Phe Met Asp
275 280 285

Asn Thr Lys Thr Ile Ile Val Gln Leu Asn Glu Ser Val Ala Ile Asn
290 295 300

Cys Thr Arg Pro Asn Asn Asn Thr Arg Lys Gly Ile His Ile Gly Pro
305 310 315 320

Gly Arg Ala Phe Tyr Ala Ala Arg Lys Ile Ile Gly Asp Ile Arg Gln
325 330 335

Ala His Cys Asn Leu Ser Arg Ala Gln Trp Asn Asn Thr Leu Lys Gln
340 345 350

Ile Val Ile Lys Leu Arg Glu His Phe Gly Asn Lys Thr Ile Lys Phe
355 360 365

Asn Gln Ser Ser Gly Gly Asp Pro Glu Ile Val Arg His Ser Phe Asn
370 375 380

Cys Gly Gly Glu Phe Phe Tyr Cys Asp Thr Thr Gln Leu Phe Asn Ser
385 390 395 400

Thr Trp Asn Gly Thr Glu Gly Asn Asn Thr Glu Gly Asn Ser Thr Ile
405 410 415

Thr Leu Pro Cys Arg Ile Lys Gln Ile Ile Asn Met Trp Gln Glu Val
420 425 430

Gly Lys Ala Met Tyr Ala Pro Pro Ile Gly Gly Gln Ile Arg Cys Ser
435 440 445

Ser Asn Ile Thr Gly Leu Leu Leu Thr Arg Asp Gly Gly Thr Glu Gly
450 455 460

Asn Gly Thr Glu Asn Glu Thr Glu Ile Phe Arg Pro Gly Gly Gly Asp
465 470 475 480

Met Arg Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val Val Lys
485 490 495

Val Glu Pro Leu Gly Val Ala Pro Thr Arg Ala Lys Arg Arg Val Val
500 505 510

Gln Arg

<210> 9
<211> 2178
<212> DNA

<213> Mycobacterium tuberculosis

<400> 9

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aacacggccg cgtcctag 3178

<210> 10
<211> 725
<212> PRT
<213> Mycobacterium tuberculosis

<400> 10

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Gln Gly Phe Ala Ile Pro Ile Gly Gln Ala Met Ala Ile Ala Gly Gln
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Ile Arg Ser Gly Gly Gly Ser Pro Thr Val His Ile Gly Pro Thr Ala
35 40 45

Phe Leu Gly Leu Gly Val Val Asp Asn Asn Gly Asn Gly Ala Arg Val
50 55 60

Gln Arg Val Val Gly Ser Ala Pro Ala Ala Ser Leu Gly Ile Ser Thr
65 70 75 80

Gly Asp Val Ile Thr Ala Val Asp Gly Ala Pro Ile Asn Ser Ala Thr
85 90 95

Ala Met Ala Asp Ala Leu Asn Gly His His Pro Gly Asp Val Ile Ser
100 105 110

Val Thr Trp Gln Thr Lys Ser Gly Gly Thr Arg Thr Gly Asn Val Thr
115 120 125

Leu Ala Glu Gly Pro Pro Ala Glu Phe Met Val Asp Phe Gly Ala Leu
130 135 140

Pro Pro Glu Ile Asn Ser Ala Arg Met Tyr Ala Gly Pro Gly Ser Ala
145 150 155 160

Ser Leu Val Ala Ala Ala Gln Met Trp Asp Ser Val Ala Ser Asp Leu
165 170 175

Phe Ser Ala Ala Ser Ala Phe Gln Ser Val Val Trp Gly Leu Thr Val
180 185 190

Gly Ser Trp Ile Gly Ser Ser Ala Gly Leu Met Val Ala Ala Ala Ser
195 200 205

```
Pro Tyr Val Ala Trp Met Ser Val Thr Ala Gly Gln Ala Glu Leu Thr
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Ala Ala Gln Val Arg Val Ala Ala Ala Ala Tyr Glu Thr Ala Tyr Gly
225                 230                 235                 240

Leu Thr Val Pro Pro Pro Val Ile Ala Glu Asn Arg Ala Glu Leu Met
                245                 250                 255

Ile Leu Ile Ala Thr Asn Leu Leu Gly Gln Asn Thr Pro Ala Ile Ala
            260                 265                 270

Val Asn Gln Ala Glu Tyr Gly Glu Met Trp Ala Gln Asp Ala Ala Ala
        275                 280                 285

Met Phe Gly Tyr Ala Ala Ala Thr Ala Thr Ala Thr Ala Thr Leu Leu
    290                 295                 300

Pro Phe Glu Glu Ala Pro Glu Met Thr Ser Ala Gly Gly Leu Leu Glu
305                 310                 315                 320

Gln Ala Ala Ala Val Glu Glu Ala Ser Asp Thr Ala Ala Ala Asn Gln
                325                 330                 335

Leu Met Asn Asn Val Pro Gln Ala Leu Gln Gln Leu Ala Gln Pro Thr
            340                 345                 350

Gln Gly Thr Thr Pro Ser Ser Lys Leu Gly Gly Leu Trp Lys Thr Val
        355                 360                 365

Ser Pro His Arg Ser Pro Ile Ser Asn Met Val Ser Met Ala Asn Asn
    370                 375                 380

His Met Ser Met Thr Asn Ser Gly Val Ser Met Thr Asn Thr Leu Ser
385                 390                 395                 400

Ser Met Leu Lys Gly Phe Ala Pro Ala Ala Ala Ala Gln Ala Val Gln
                405                 410                 415

Thr Ala Ala Gln Asn Gly Val Arg Ala Met Ser Ser Leu Gly Ser Ser
            420                 425                 430

Leu Gly Ser Ser Gly Leu Gly Gly Val Ala Ala Asn Leu Gly Arg
        435                 440                 445

Ala Ala Ser Val Gly Ser Leu Ser Val Pro Gln Ala Trp Ala Ala Ala
    450                 455                 460

Asn Gln Ala Val Thr Pro Ala Ala Arg Ala Leu Pro Leu Thr Ser Leu
465                 470                 475                 480
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Thr Ser Ala Ala Glu Arg Gly Pro Gly Gln Met Leu Gly Gly Leu Pro
485 490 495

Val Gly Gln Met Gly Ala Arg Ala Gly Gly Gly Leu Ser Gly Val Leu
500 505 510

Arg Val Pro Pro Arg Pro Tyr Val Met Pro His Ser Pro Ala Ala Gly
515 520 525

Asp Ile Ala Pro Pro Ala Leu Ser Gln Asp Arg Phe Ala Asp Phe Pro
530 535 540

Ala Leu Pro Leu Asp Pro Ser Ala Met Val Ala Gln Val Gly Pro Gln
545 550 555 560

Val Val Asn Ile Asn Thr Lys Leu Gly Tyr Asn Asn Ala Val Gly Ala
565 570 575

Gly Thr Gly Ile Val Ile Asp Pro Asn Gly Val Val Leu Thr Asn Asn
580 585 590

His Val Ile Ala Gly Ala Thr Asp Ile Asn Ala Phe Ser Val Gly Ser
595 600 605

Gly Gln Thr Tyr Gly Val Asp Val Val Gly Tyr Asp Arg Thr Gln Asp
610 615 620

Val Ala Val Leu Gln Leu Arg Gly Ala Gly Gly Leu Pro Ser Ala Ala
625 630 635 640

Ile Gly Gly Gly Val Ala Val Gly Glu Pro Val Val Ala Met Gly Asn
645 650 655

Ser Gly Gly Gln Gly Gly Thr Pro Arg Ala Val Pro Gly Arg Val Val
660 665 670

Ala Leu Gly Gln Thr Val Gln Ala Ser Asp Ser Leu Thr Gly Ala Glu
675 680 685

Glu Thr Leu Asn Gly Leu Ile Gln Phe Asp Ala Ala Ile Gln Pro Gly
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Asp Ala Gly Gly Pro Val Val Asn Gly Leu Gly Gln Val Val Gly Met
705 710 715 720

Asn Thr Ala Ala Ser
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<210> 11
<211> 1169
<212> DNA

<213> Plasmodium falciparum

<400> 11

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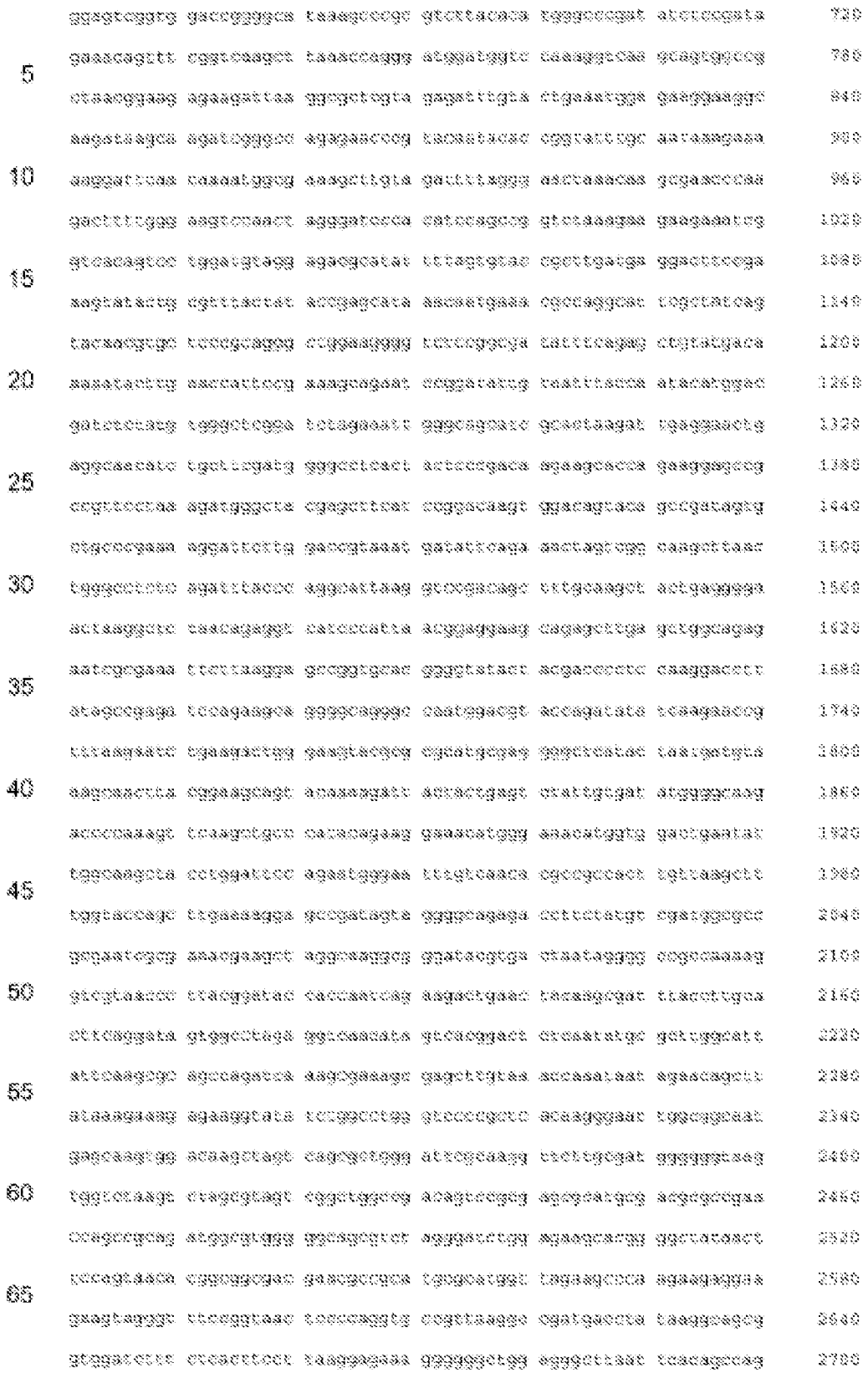

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All references referred to in this application, including patent and patent applications, are incorporated herein by reference to the fullest extent possible.

Throughout the specification and the claims which follow, unless the context requires otherwise, the word 'comprise', and variations such as 'comprises' and 'comprising', will be understood to imply the inclusion of a stated integer, step, group of integers or group of steps but not to the exclusion of any other integer, step, group of integers or group of steps.

The application of which this description and claims forms part may be used as a basis for priority in respect of any subsequent application. The claims of such subsequent application may be directed to any feature or combination of features described herein. They may take the form of product, composition, process, or use claims and may include, by way of example and without limitation, the following claims:

Claims

1. A method of raising an immune response against a pathogen which comprises administering (i) one or more first immunogenic polypeptides derived from said pathogen; (ii) one or more adenoviral vectors comprising one or more heterologous polynucleotides encoding one or more second immunogenic polypeptides derived from said pathogen; and (iii) an adjuvant; wherein the one or more first immunogenic polypeptides, the one or more adenoviral vectors and the adjuvant are administered concomitantly.

2. A method of raising an immune response against a pathogen which comprises administering (i) one or more first immunogenic polypeptides derived from said pathogen co-formulated with an adjuvant; and (ii) one or more adenoviral vectors comprising one or more heterologous polynucleotides encoding one or more second immunogenic polypeptides derived from said pathogen; wherein one or more immunogenic polypeptides and adjuvant, and one or more adenoviral vectors are administered concomitantly.

3 A method of stimulating the production of pathogen-specific CD4+ and/or CD8+ T-cells and/or antibodies in mammals which comprises administering to said mammal (i) one or more first immunogenic polypeptides derived from a pathogen; (ii) one or more adenoviral vectors comprising one or more heterologous polynucleotides encoding one or more second immunogenic polypeptides derived from said pathogen; and (iii) an adjuvant; wherein the one or more first immunogenic polypeptides, the one or more adenoviral vectors and the adjuvant are administered concomitantly, for example by administering an immunologically effective amount of an aforesaid composition.

4. A method of raising an immune response against a pathogen which consists of (a) administering (i) one or more first immunogenic polypeptides derived from said pathogen; (ii) one or more adenoviral vectors comprising one or more heterologous polynucleotides encoding one or more second immunogenic polypeptides derived from said pathogen; and (iii) an adjuvant; wherein the one or more immunogenic polypeptide, the one or more adenoviral vector and the adjuvant are administered concomitantly; and (b) optionally repeating the steps of (a).

5. A method of raising an immune response against a pathogen which comprises administering (i) one or more first immunogenic polypeptides derived from said pathogen; (ii) one or more adenoviral vectors comprising one or more heterologous polynucleotides encoding one or more second immunogenic polypeptides derived from said pathogen; and (iii) an adjuvant; wherein the one or more first immunogenic polypeptides, the one or more adenoviral vectors and the adjuvant are administered concomitantly; and wherein the method does not involve administering any priming dose of immunogenic polypeptide or polynucleotide encoding immunogenic polypeptide.

6. A method according to any one of claims 1 to 5 wherein one or more immunogenic polypeptides, one or more adenoviral vectors and an adjuvant are co-formulated.

7. A method according to any one of claims 1 to 6 wherein production of pathogen specific CD4+ T-cells and CD8+ T-cells and antibodies is stimulated.

8. A vaccine composition comprising (i) one or more first immunogenic polypeptides derived from a pathogen; (ii) one or more adenoviral vectors comprising one or more heterologous polynucleotide encoding one or more second immunogenic polypeptides derived from said pathogen; and (iii) an adjuvant.

9. A method or vaccine composition according to any one of claims 1 to 8 wherein one or more of said one or more first immunogenic polypeptides is substantially the same as one or more of said one or more second immunogenic polypeptides.

10. A method or vaccine composition according to any one of claims 1 to 8 wherein one or more of said one or more first immunogenic polypeptides contains at least one antigen which is substantially the same as an antigen contained in one or more of said one or more second immunogenic polypeptides.

11. A method or vaccine composition according to any one of claims 1 to 10 wherein one or more the first immunogenic polypeptides comprises at least one T cell epitope.

12. A method or vaccine composition according to any one of claims 1 to 11 wherein the one or more first immunogenic polypeptide comprises at least one B cell epitope.

13. A method or vaccine composition according to any one of claims 1 to 12 wherein one or more of said one or more first immunogenic polypeptides and one or more of said one or more second immunogenic polypeptides share one or more identical B-cell and/or T-cell epitopes.

14. A method or vaccine composition according to any one of claims 1 to 8 wherein none of the one or more of said one or more first immunogenic polypeptides is substantially the same as or contains any antigen in common with one or more of said one or more second immunogenic polypeptides.

15. A method or vaccine composition according to any one of claims 1 to 14 wherein one or more of the adenoviral vectors is derived from a human adenovirus.

16. A method or vaccine composition according to claim 15 wherein the human adenovirus serotype is selected from Ad1, Ad2, Ad4, Ad5, Ad6, Ad11, Ad 24, Ad34 and Ad35.

17. A method or vaccine composition according to any one of claims 1 to 14 wherein one or more of the adenoviral vectors is derived from a non-human primate adenovirus.

18. A method or vaccine composition according to claim 17 wherein the non-human primate adenovirus serotype is selected from chimpanzee adenovirus serotypes Pan5, Pan6, Pan7 and Pan9.

19. A method or vaccine composition according to any one of claims 1 to 18 wherein the pathogen is HIV.

20. A method or vaccine composition according to claim 19 wherein the immunogenic polypeptides contain HIV derived antigens which are selected from Env, Nef, Gag, and Pol and immunogenic derivatives thereof and immunogenic fragments thereof.

21. A method or vaccine composition according to claim 20 wherein a first immunogenic polypeptide is p24-RT-Nef-p17.

22. A method or vaccine composition according to claim 20 or claim 21 wherein a second immunogenic polypeptide is Gag-RT-Nef.

23. A method or vaccine composition according to any one of claims 1 to 18 wherein the pathogen is *Plasmodium falciparum* and/or *Plasmodium vivax*.

24. A method or vaccine composition according to claim 23 wherein the immunogenic polypeptides contain antigens derived from *Plasmodium falciparum* and/or *Plasmodium vivax* which are selected from circumsporozoite (CS) protein, MSP-1, MSP-3, AMA-1, LSA-1, LSA-3 and immunogenic derivatives thereof or immunogenic fragments thereof.

25. A method or vaccine composition according to claim 24 wherein a/the immunogenic polypeptide is the hybrid protein RTS.

26. A method or vaccine composition according to claim 25 wherein RTS is presented in the form of a mixed particle known as RTS,S.

27. A method or vaccine composition according to any one of claims 24 to 26 wherein a/the immunogenic polypeptide encoded by a polynucleotide is the CS protein from *Plasmodium falciparum* or immunogenic fragment thereof.

28. A method or vaccine composition according to any one of claims 1 to18 wherein the pathogen is *Mycobacterium tuberculosis*.

29. A method or vaccine composition according to any one of claims 1 to 28 wherein the adjuvant comprises a preferential stimulator of Th1 responses.

30. A method or vaccine composition according to claim 29 wherein the adjuvant comprises QS21 and/or 3D-MPL and/or CpG.

31. A method or vaccine composition according to claim 30 wherein the adjuvant comprises QS21 and 3D-MPL.

32. A method or vaccine composition according to any one of claims 1 to 31 wherein the adjuvant contains an oil-in-water emulsion.

33. A method or vaccine composition according to any one of claims 1 to 31 wherein the adjuvant contains liposomes.

34. A method of stimulating an immune response in a mammal which comprises administering to a subject an immunologically effective amount of a vaccine composition according to any one of claims 8 to 33.

35. Use of a vaccine composition according to any one of claim 8 to 33 in the manufacture of a medicament for stimulating an immune response in a mammal.

36. A vaccine composition according to any one of claims 8 to 33 for use in stimulating an immune response in a mammal.

37. A kit comprising (i) one or more first immunogenic polypeptides derived from a pathogen; (ii) one or more adenoviral vectors comprising one or more heterologous polynucleotides encoding one or more second immunogenic polypeptides derived from said pathogen; and (iii) an adjuvant.

38. A kit comprising (i) one or more first immunogenic polypeptides derived from a pathogen and an adjuvant; and (ii) one or more second adenoviral vectors comprising one or more heterologous polynucleotides encoding one or more immunogenic polypeptides derived from said pathogen.

39. A method, or vaccine, or kit, or use according to any preceding claim wherein the first immunogenic polypeptide comprises p24-RT-Nef-p17, the adjuvant comprises 3D-MPL and QS21 in a liposome such as adjuvant 8 herein, and the adenoviral vector comprises a chimpanzee adenovirus serotype Pan7 vector comprising a polynucleotide encoding the immunogenic polypeptide Gag-RT-Nef, optionally codon optimised.

40 A method, or vaccine, or kit, or use according to any preceding claim wherein one, or two, or all of the polypeptide, adenoviral vector and adjuvant components are combined with a pharmaceutically acceptable excipient.

Figure 1

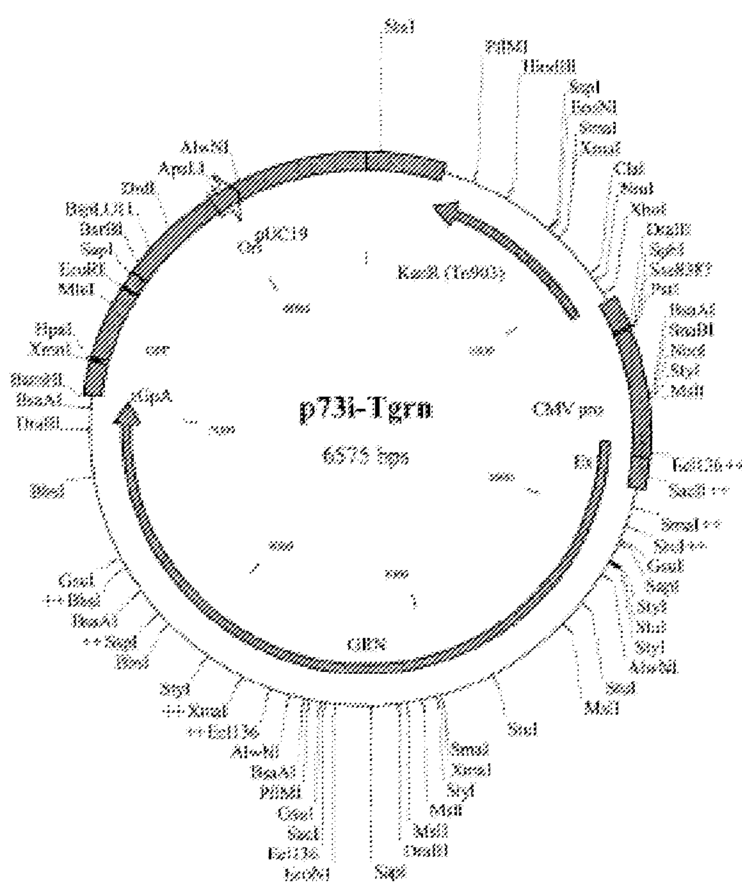

Figure 2a

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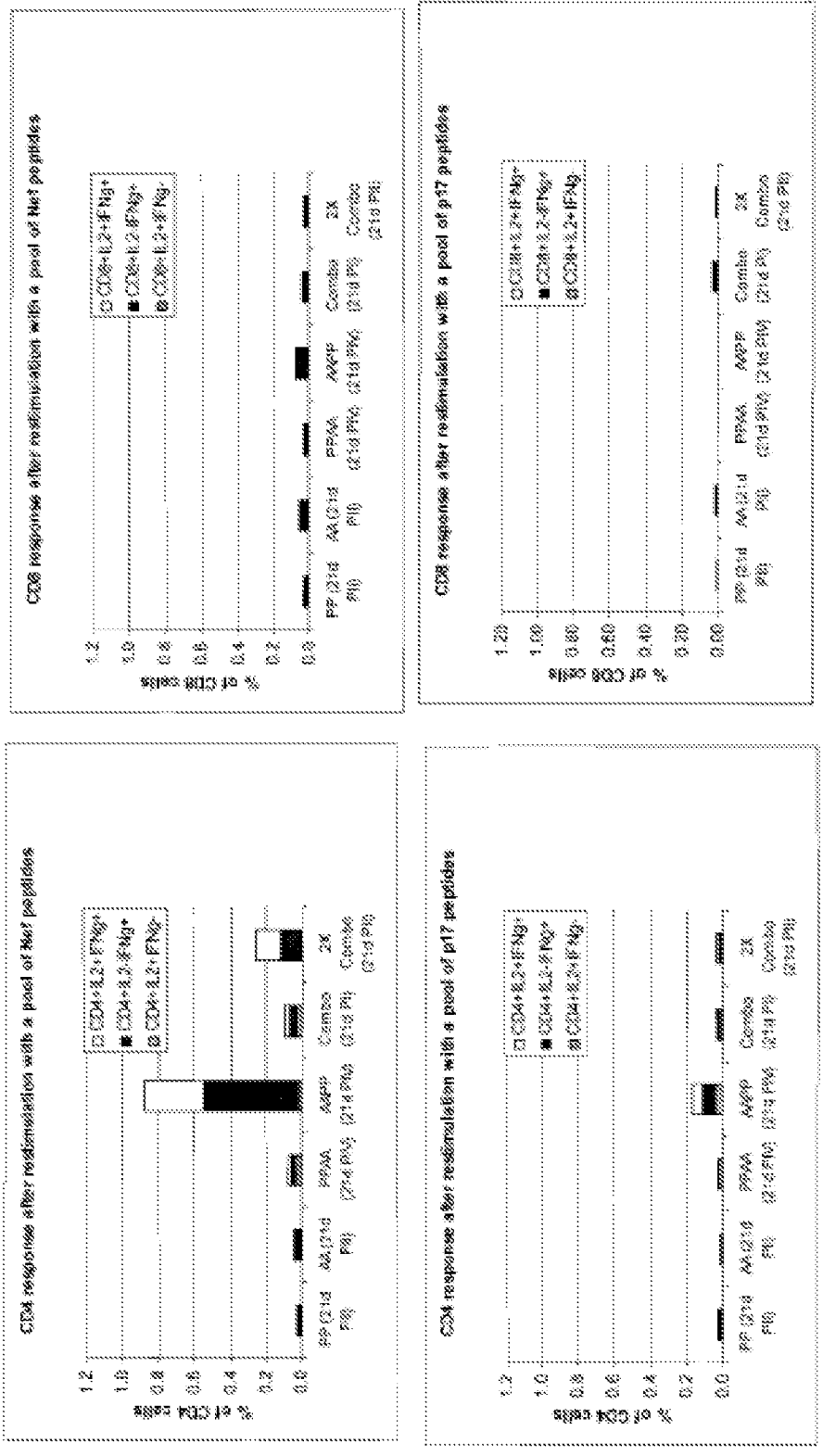

Figure 2b

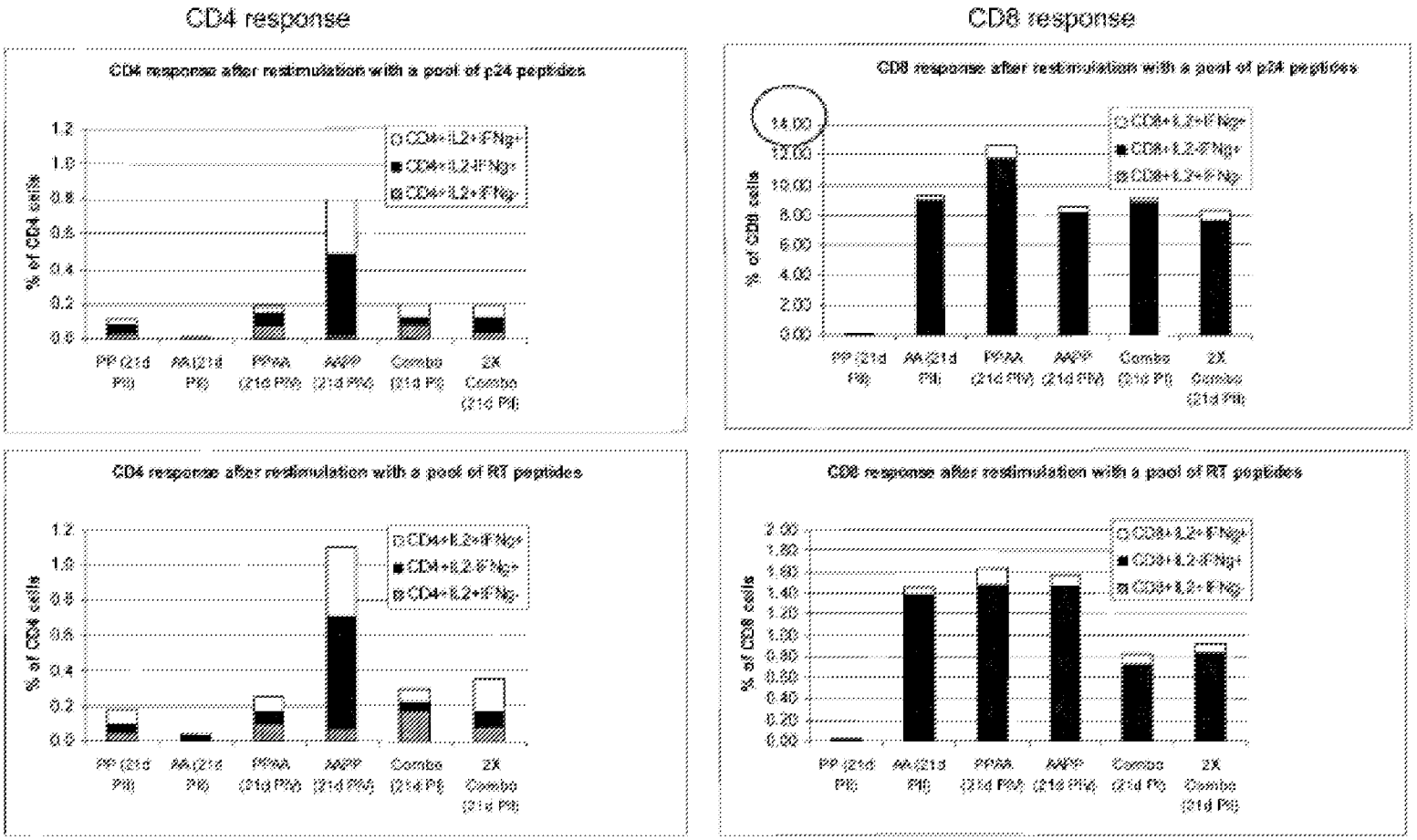
CD4 response
CD8 response
CD4 response after restimulation with a pool of p24 peptides
CD8 response after restimulation with a pool of p24 peptides
CD4 response after restimulation with a pool of RT peptides
CD8 response after restimulation with a pool of RT peptides
% of CD4 cells
% of CD8 cells
CD4+IL2+IFNg+
CD4+IL2-IFNg+
CD4+IL2+IFNg-
CD8+IL2+IFNg+
CD8+IL2-IFNg+
CD8+IL2+IFNg-
PP (21d PI)
AA (21d PI)
PPAA (21d PI)
AAPP (21d PI)
Combo (21d PI)
2X Combo (21d PI)

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Figure 3a

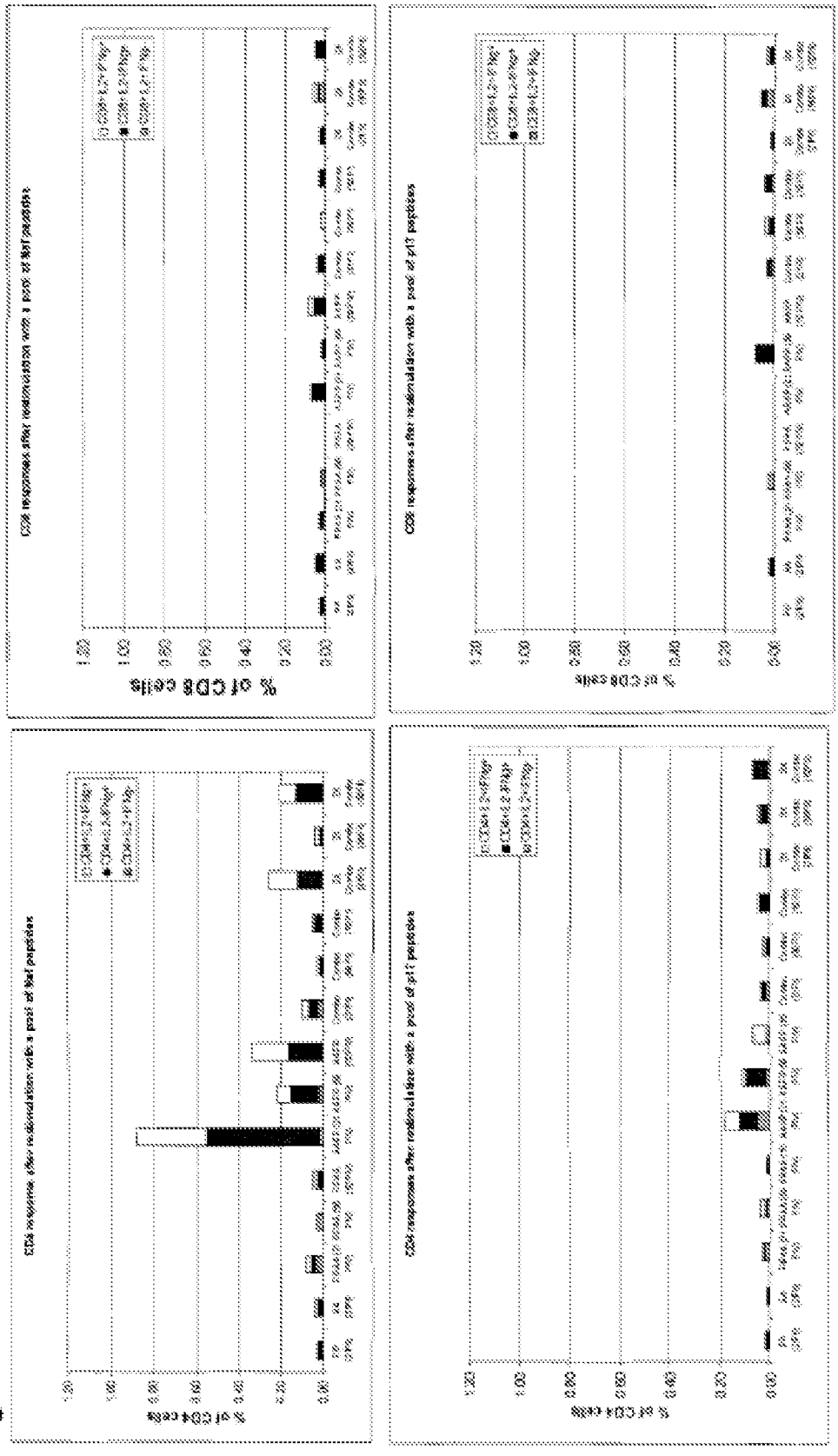

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Figure 3b

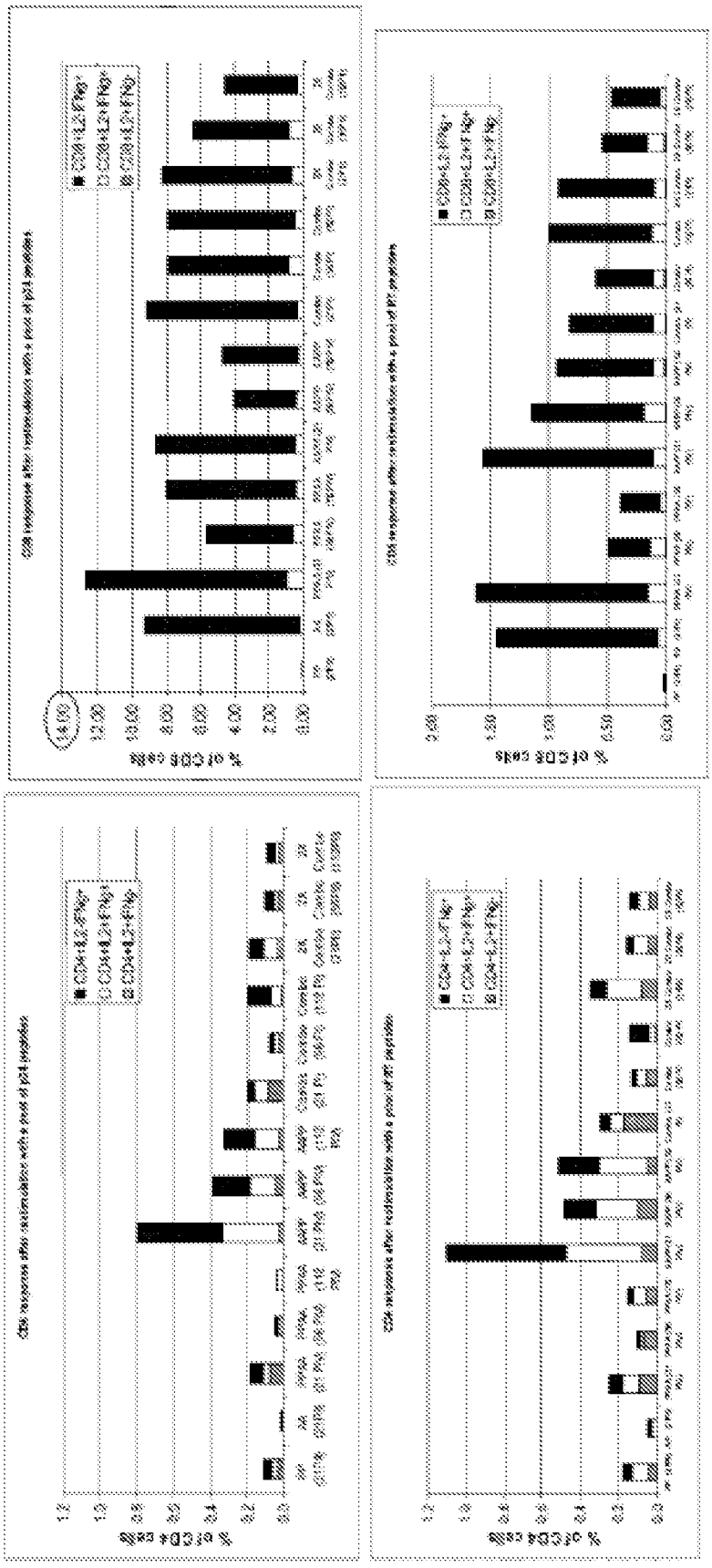


Figure 4

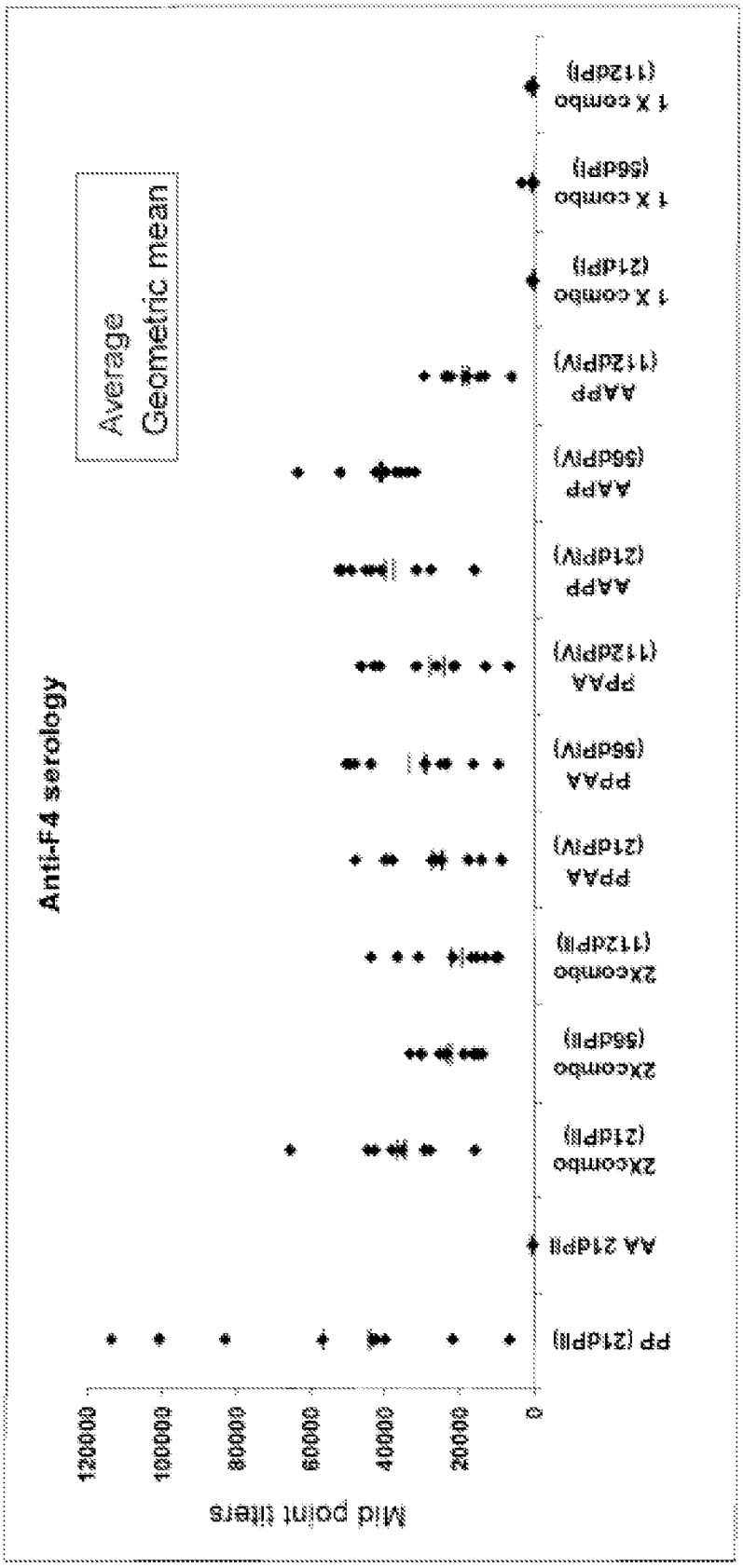
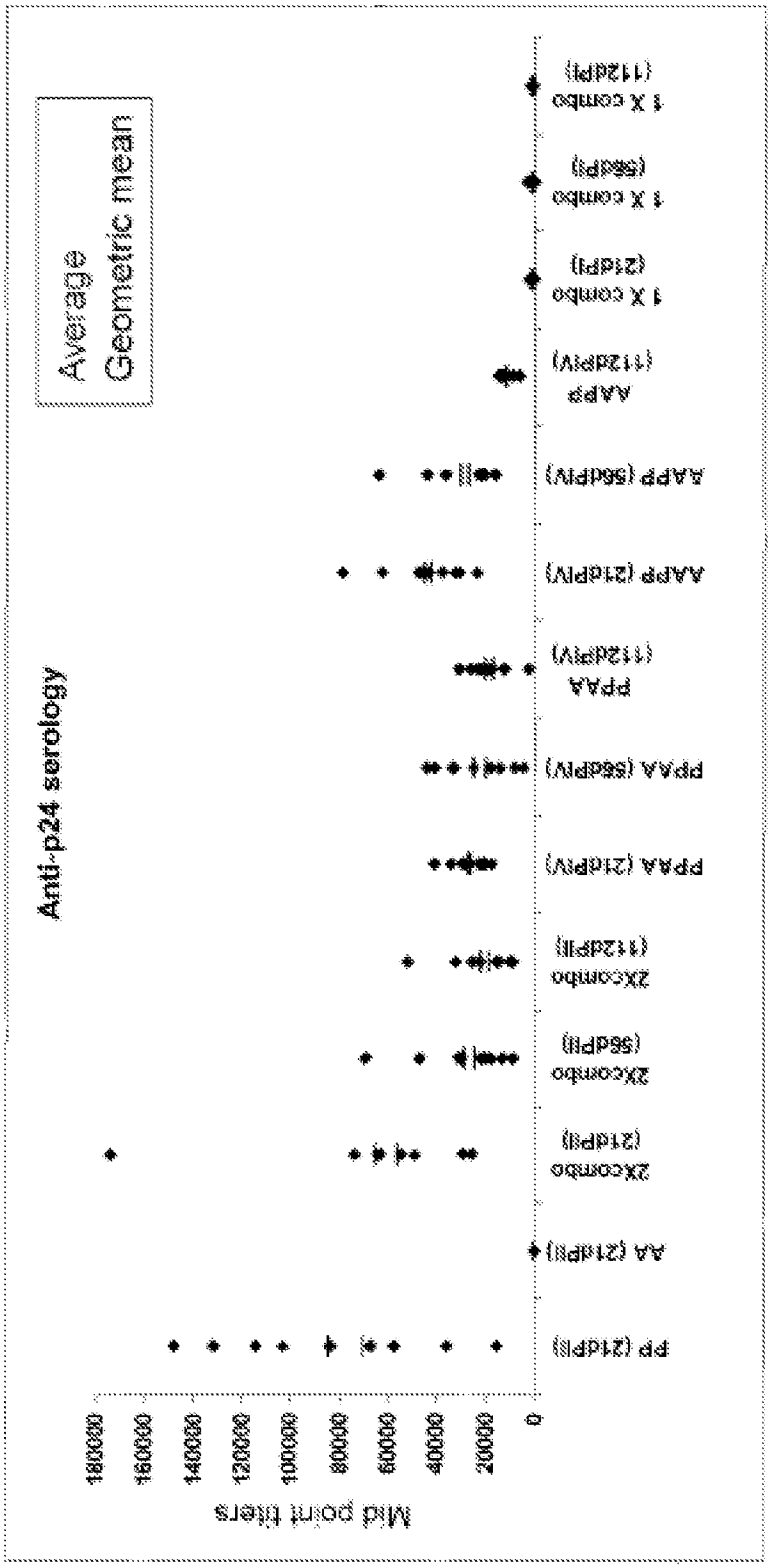

Anti-F4 serology
Mid point titers
120000
100000
80000
60000
40000
20000
0
Average
Geometric mean
PP (21dPII)
AA 21dPII
2Xcombo (21dPII)
2Xcombo (56dPII)
2Xcombo (112dPII)
PPAA (21dPIV)
PPAA (56dPIV)
PPAA (112dPIV)
AAPP (21dPIV)
AAPP (56dPIV)
AAPP (112dPIV)
1 X combo (21dPII)
1 X combo (56dPII)
1 X combo (112dPII)

Figure 5


Anti-p24 serology
Average
Geometric mean
Mid point titers
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
PP (21dPII)
AA (21dPII)
2Xcombo (21dPII)
2Xcombo (56dPII)
2Xcombo (112dPII)
PPAA (21dPIV)
PPAA (56dPIV)
PPAA (112dPIV)
AAPP (21dPIV)
AAPP (56dPIV)
AAPP (112dPIV)
1 X combo (21dPI)
1 X combo (56dPI)
1 X combo (112dPI)

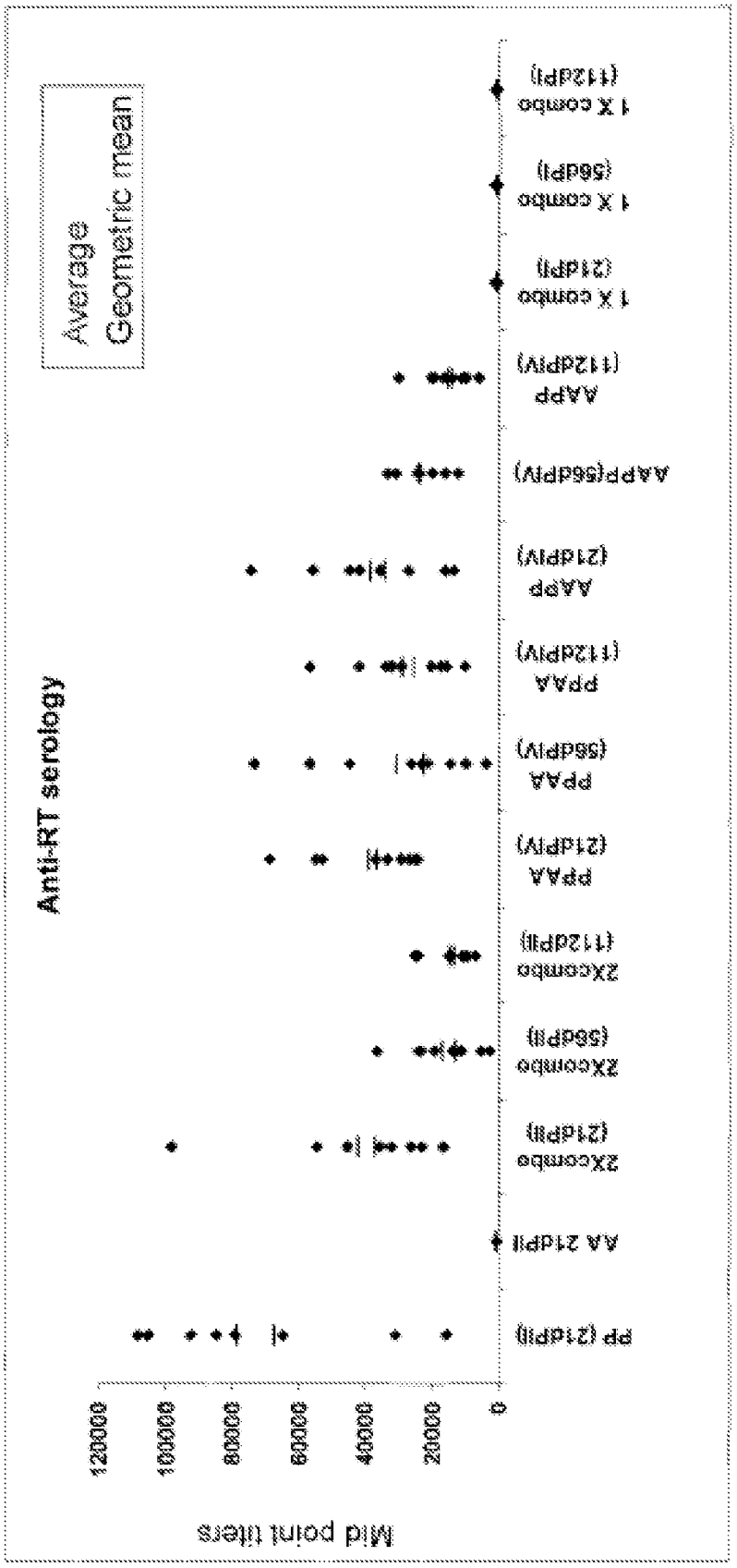
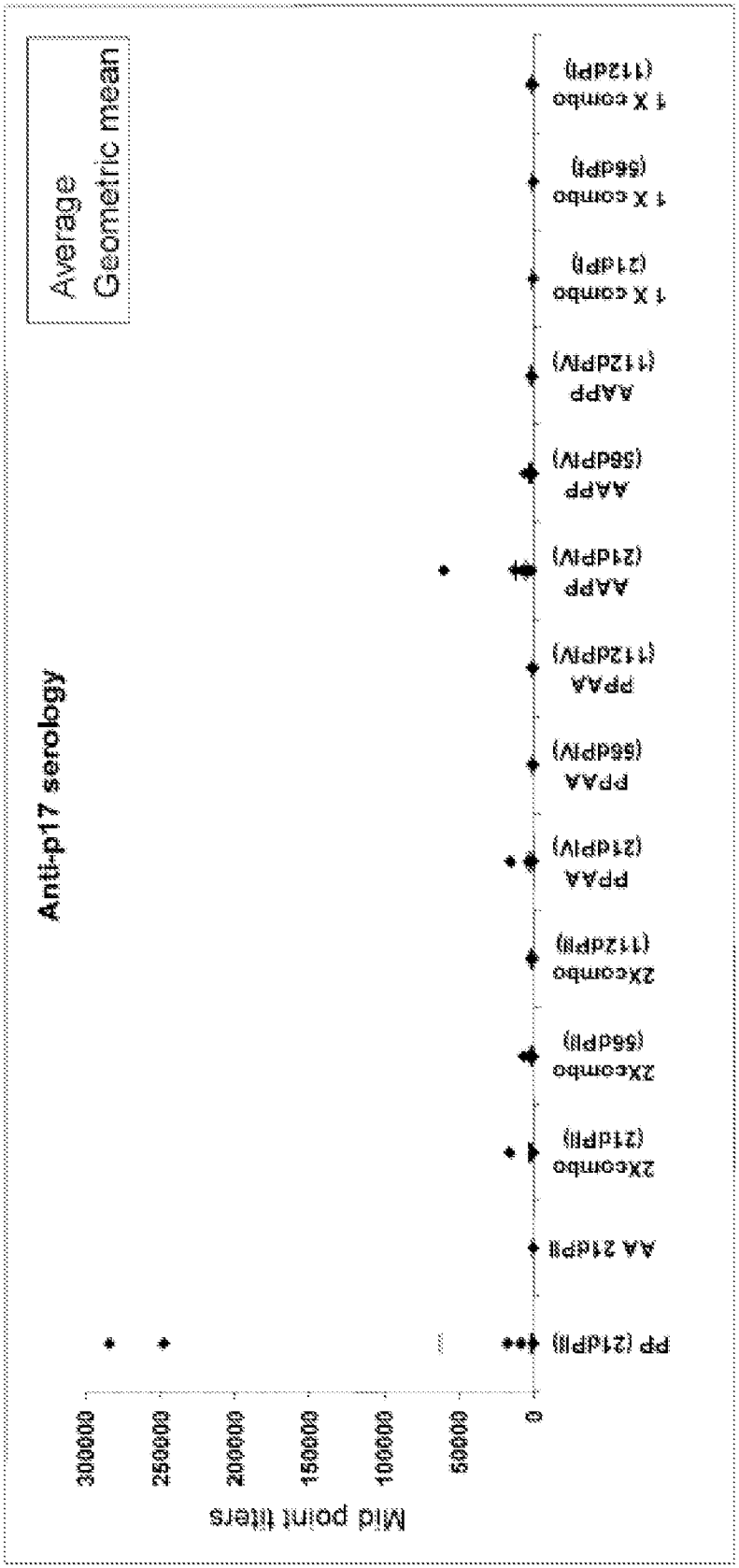

Mid point titers
120000
100000
80000
60000
40000
20000
0
PP (21dPII)
AA 21dPII
2Xcombo (21dPII)
2Xcombo (56dPII)
2Xcombo (112dPII)
PPAA (21dPIV)
PPAA (56dPIV)
PPAA (112dPIV)
AAPP (21dPIV)
AAPP(56dPIV)
AAPP (112dPIV)
1 X combo (21dPII)
1 X combo (56dPII)
1 X combo (112dPII)
Anti-RT serology
Average Geometric mean

Figure 6

Figure 7


Anti-p17 serology
Average
Geometric mean
Mid point titers
3000000
2500000
2000000
1500000
1000000
500000
0
PP (21dPII)
AA 21dPII
2Xcombo (21dPII)
2Xcombo (56dPII)
2Xcombo (112dPII)
PPAA (21dPIV)
PPAA (56dPIV)
PPAA (112dPIV)
AAPP (21dPIV)
AAPP (56dPIV)
AAPP (112dPIV)
1 X combo (21dPI)
1 X combo (56dPI)
1 X combo (112dPI)

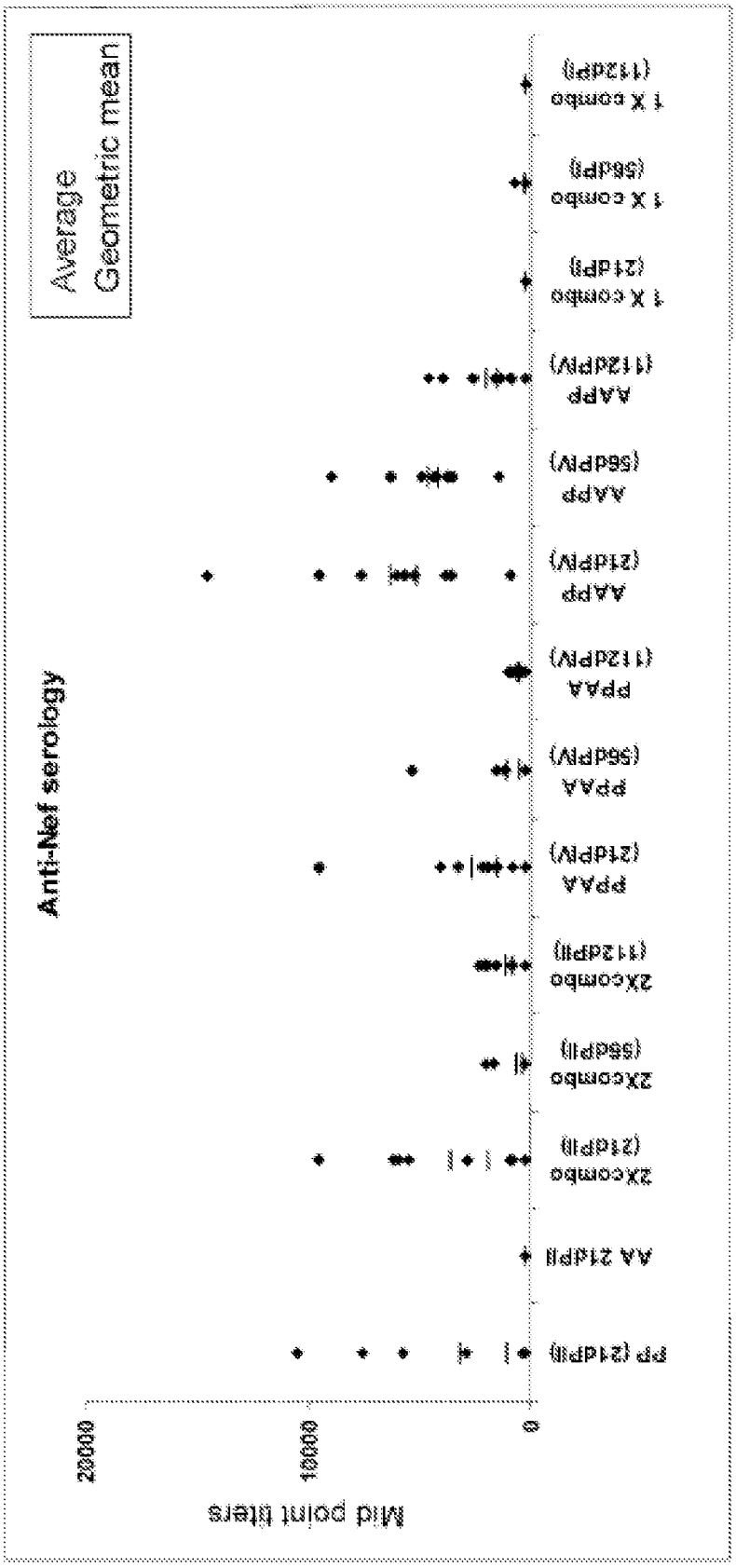

Anti-Nef serology
Average
Geometric mean
Mid point titers
20000
10000
0
FP (21dPII)
AA 21dPII
2Xcombo
(21dPII)
2Xcombo
(56dPII)
2Xcombo
(112dPII)
PPAA
(21dPIV)
PPAA
(56dPIV)
PPAA
(112dPIV)
AAPP
(21dPIV)
AAPP
(56dPIV)
AAPP
(112dPIV)
1 X combo
(21dPI)
1 X combo
(56dPI)
1 X combo
(112dPI)

Figure 8

Figure 9

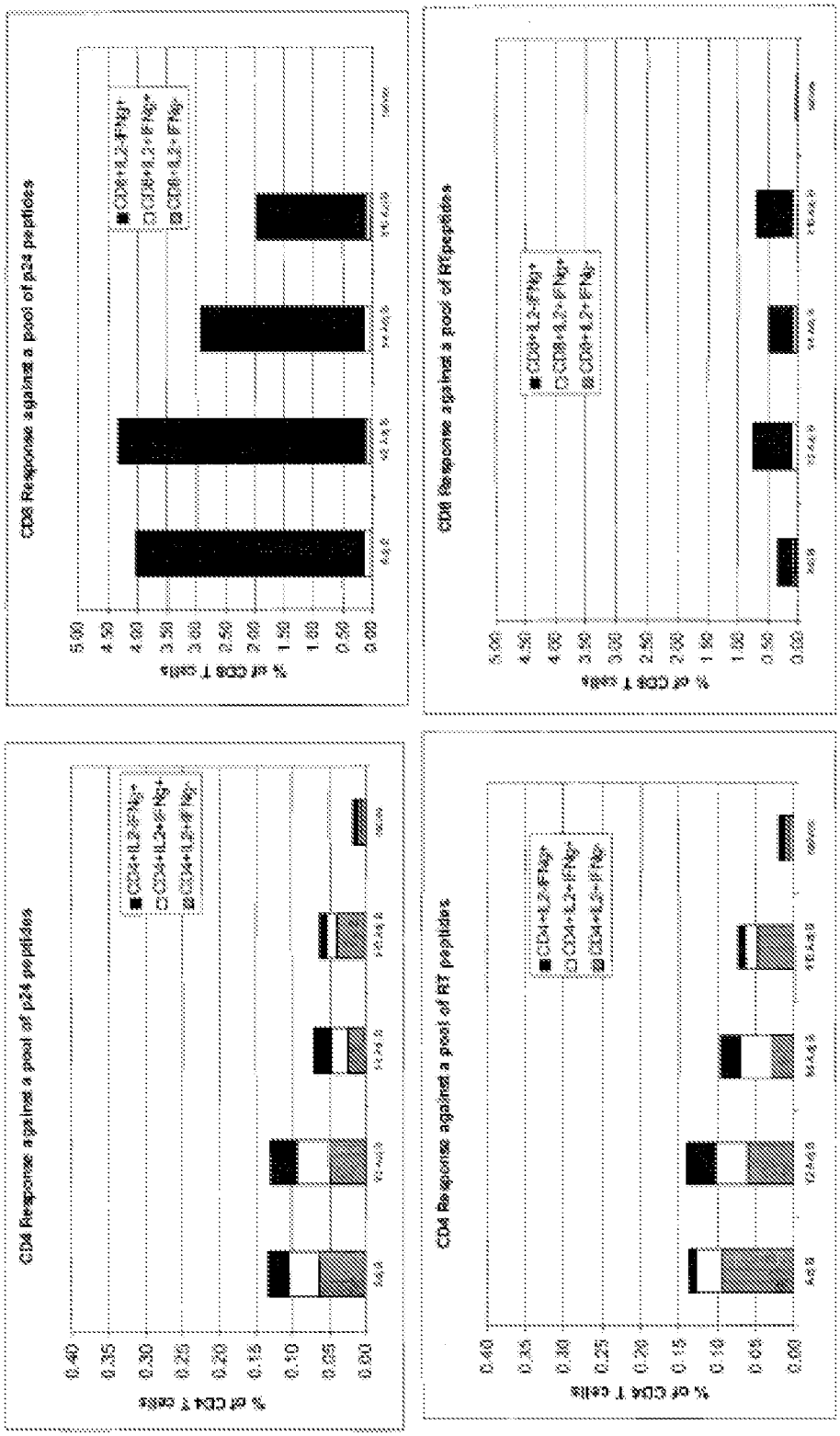

CD4 Response against a pool of p24 peptides
CD8 Response against a pool of p24 peptides
CD4 Response against a pool of RT peptides
CD8 Response against a pool of RT peptides

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Figure 10

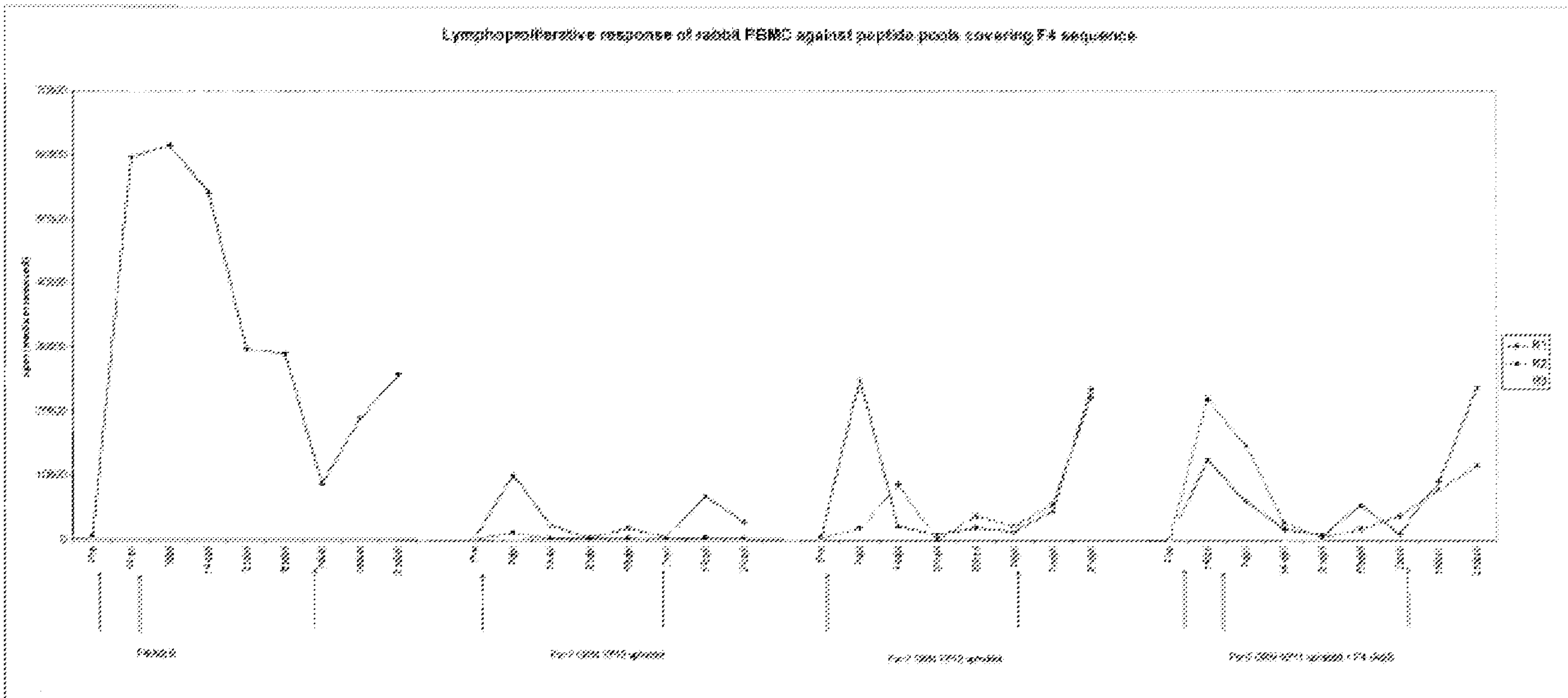

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Figure 11

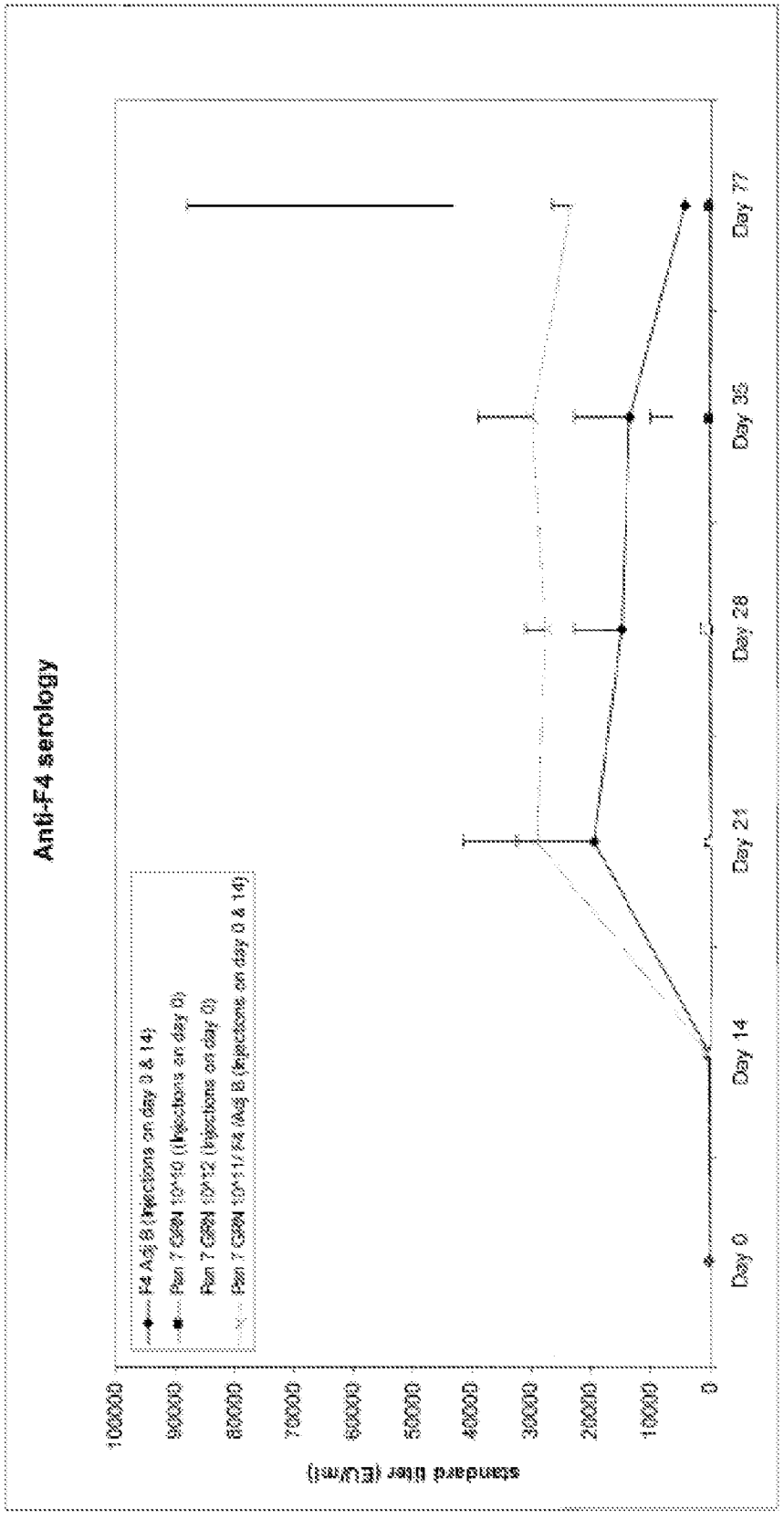

Figure 12a

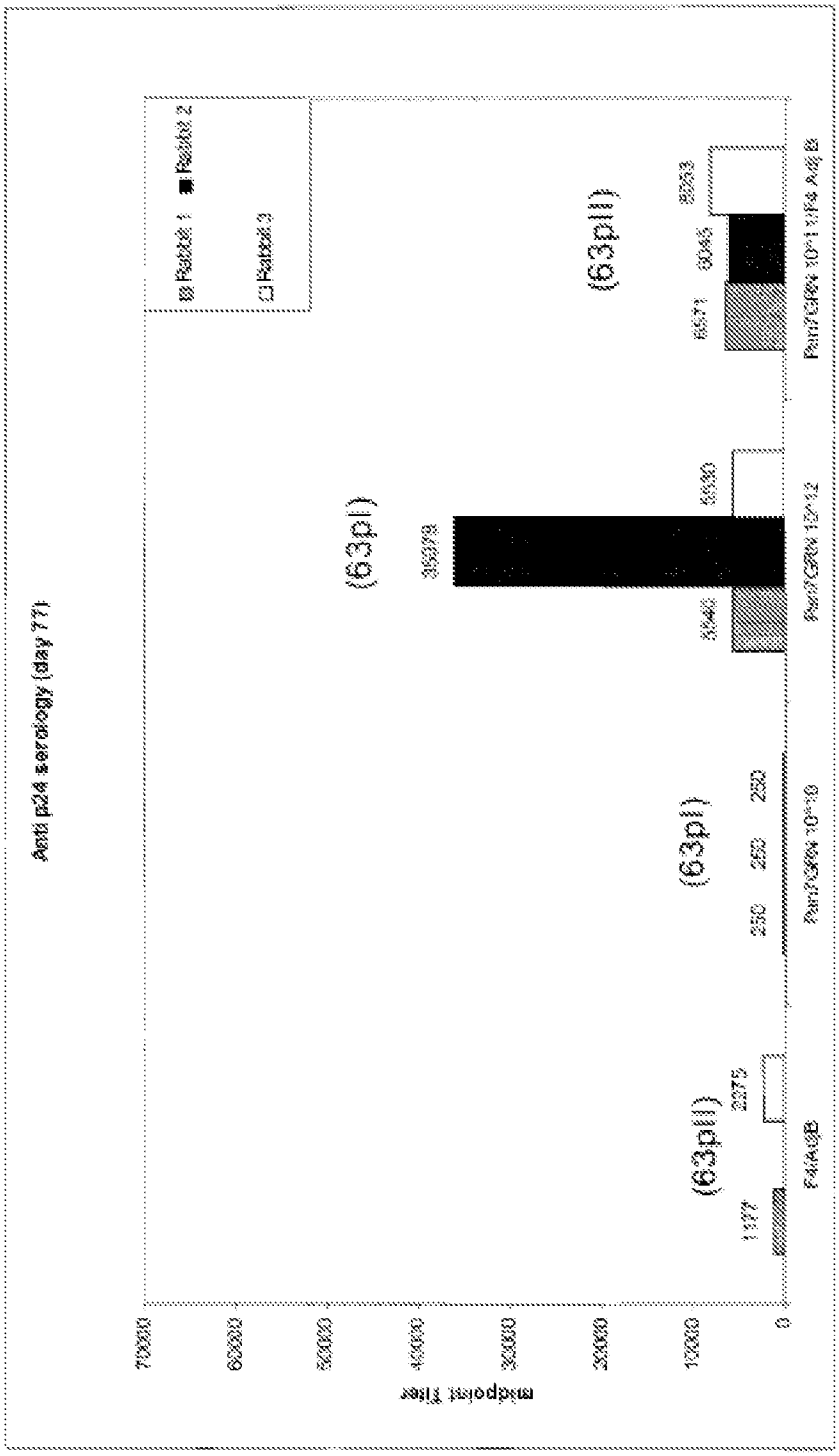
Anti p24 serology (day 77)
Rabbit 1
Rabbit 2
Rabbit 3
endpoint titer
700000
600000
500000
400000
300000
200000
100000
0
1177
2375
250
252
280
35378
3040
6930
6571
6045
8263
(63pII)
(63pI)
(63pII)
(63pI)
(63pII)
F4/A40B
Pan3/GNN 10^10
Pan3/GNN 10^11
Pan3/GNN 10^11 F4/ A40 B

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Figure 12b

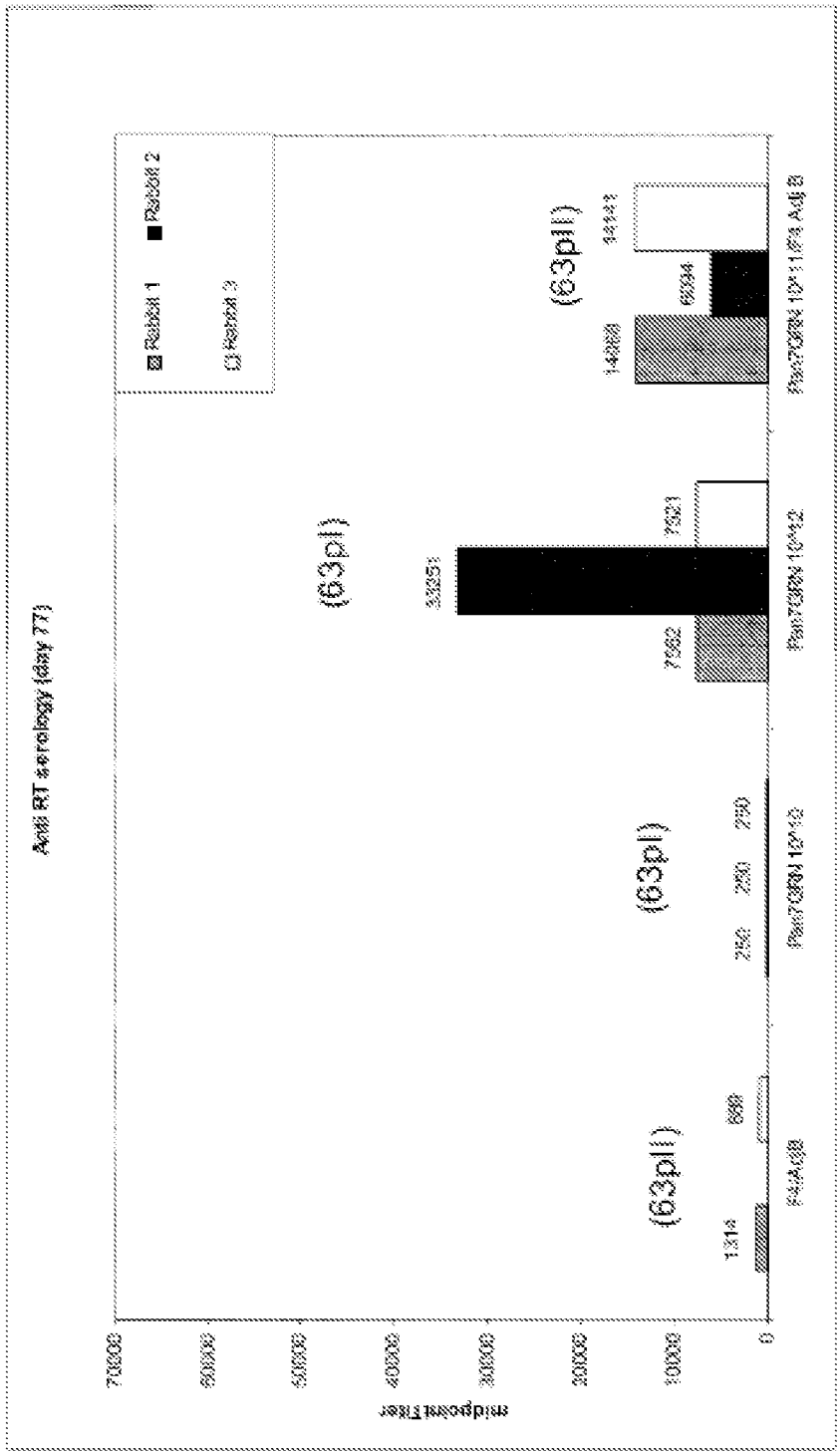


Figure 13

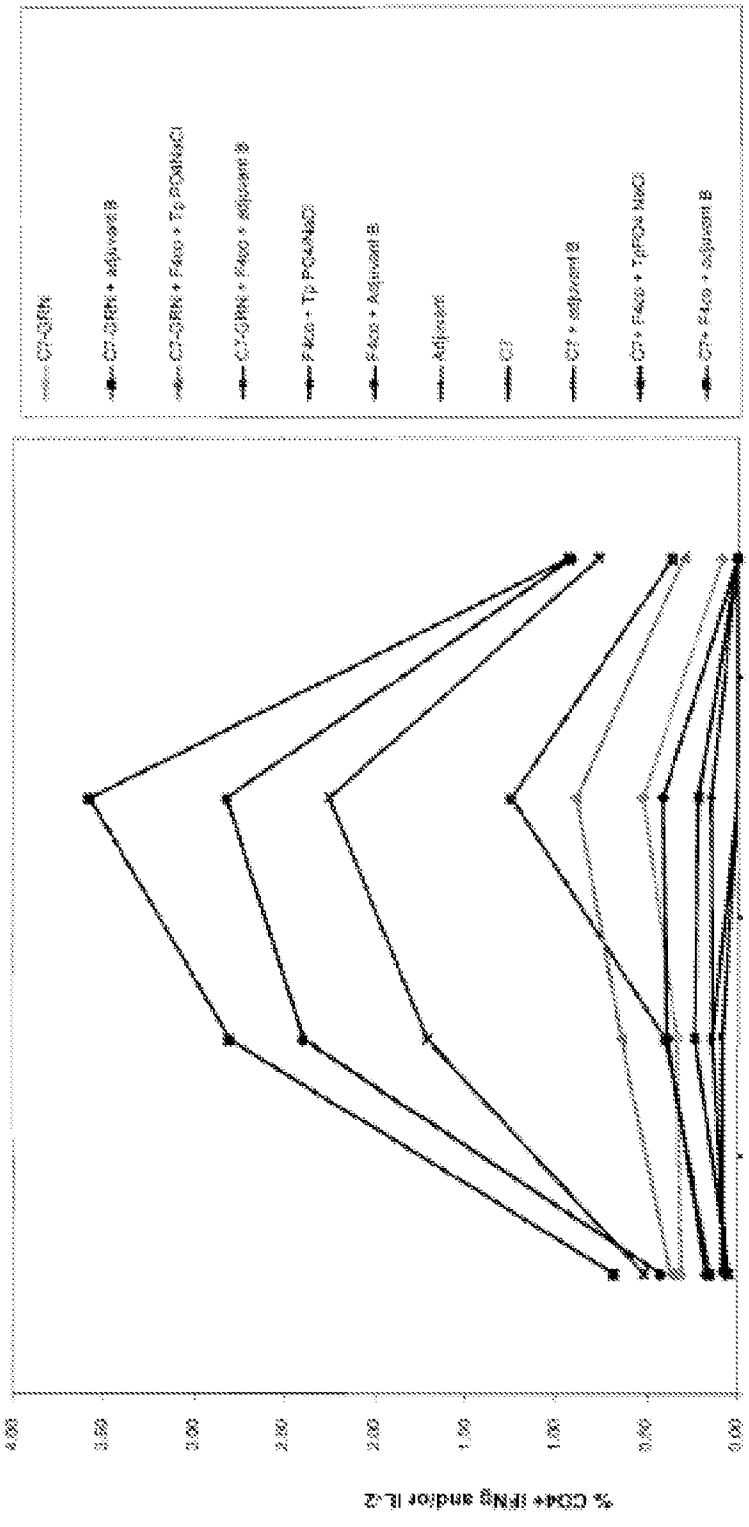

% CD4+ IFNg and/or IL-2
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
21 dpi 1
7 dpi
21 dpi
Stim
CT-SRK
CT-SRK + Adjuvant B
CT-SRK + Paca + Tp PCaMeCl
CT-SRK + Paca + Adjuvant B
Paca + Tp PCaMeCl
Paca + Adjuvant B
Adjuvant
CT
CT + adjuvant B
CT + Paca + TpPCa MeCl
CT+ Paca + adjuvant B

Figure 14

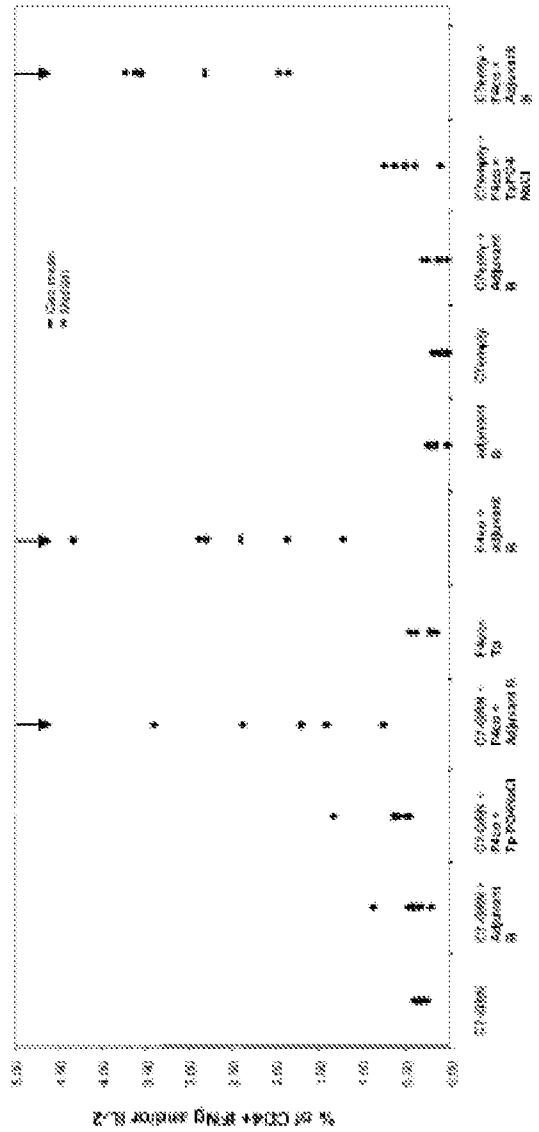


Figure 15A

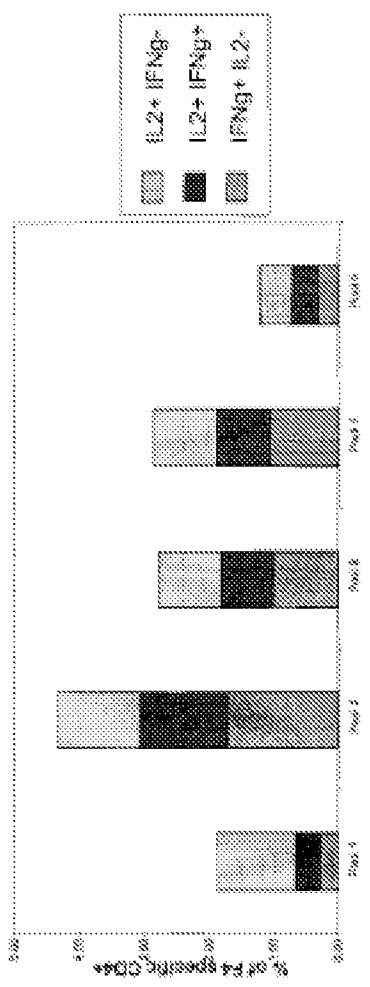


Figure 15B

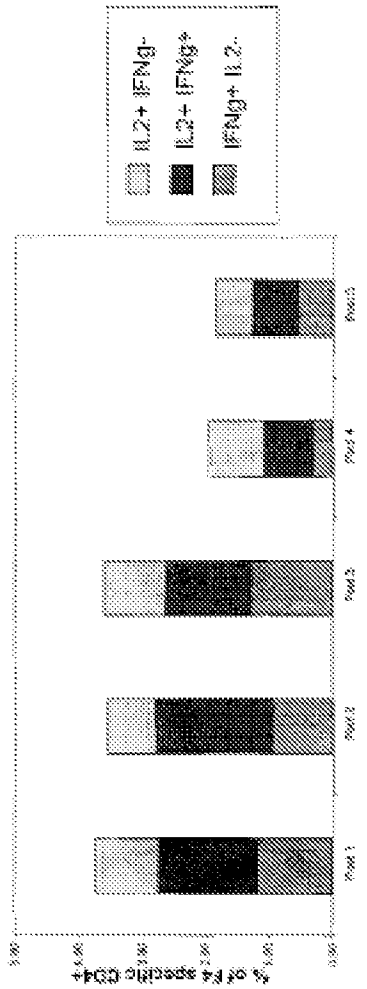


Figure 15C

F4coiAdjuvant B + CT-GBK 1dpII
IL2+ IFNg
IL2+IFNg+
IFNg+ IL2-
% of F4 specific CD4+

Figure 16

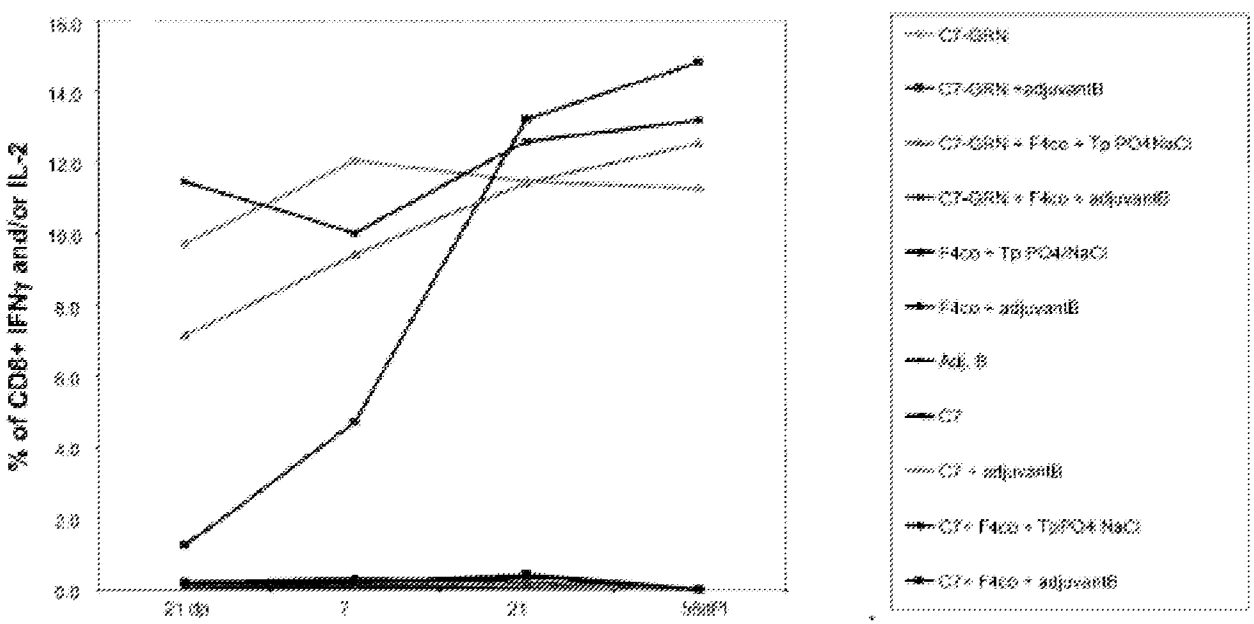

% of CD8+ IFNγ and/or IL-2
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
7
21
C7-GRN
C7-GRN +adjuvantB
C7-GRN + F4co + Tp PO4NaCl
C7-GRN + F4co + adjuvantB
F4co + Tp PO4/NaCl
F4co + adjuvantB
Adj. B
C7
C7 + adjuvantB
C7+ F4co + TpPO4 NaCl
C7+ F4co + adjuvantB

Figure 17A

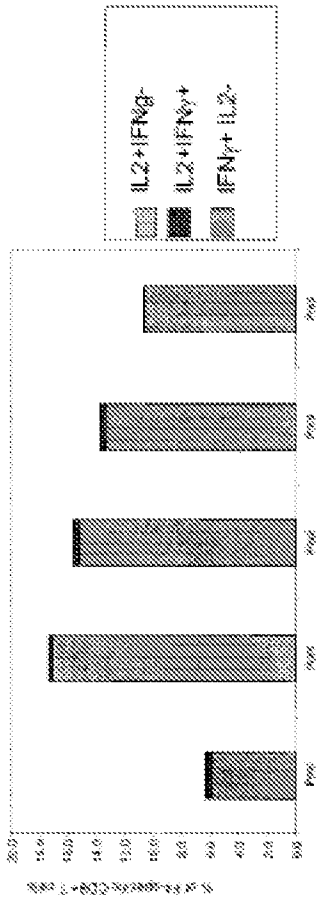


Figure 17B

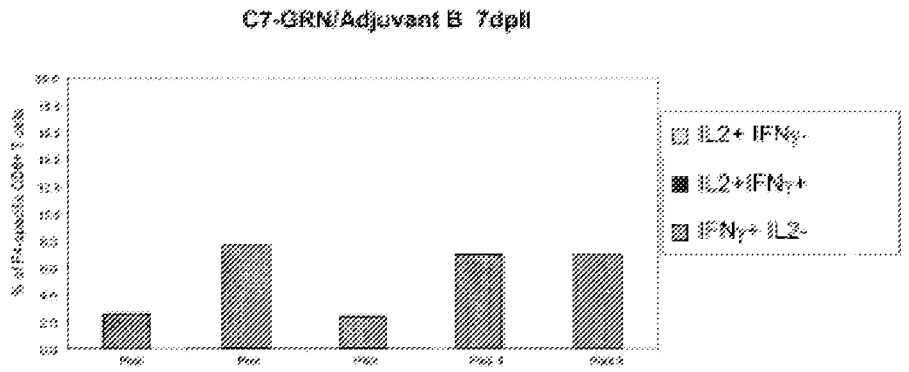


Figure 17 C

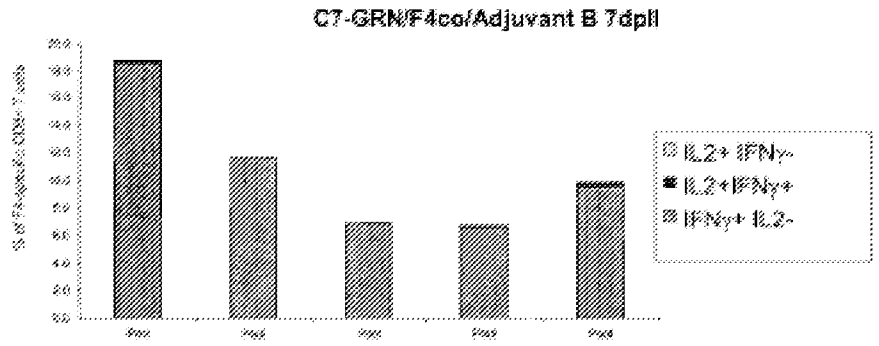


Figure 18

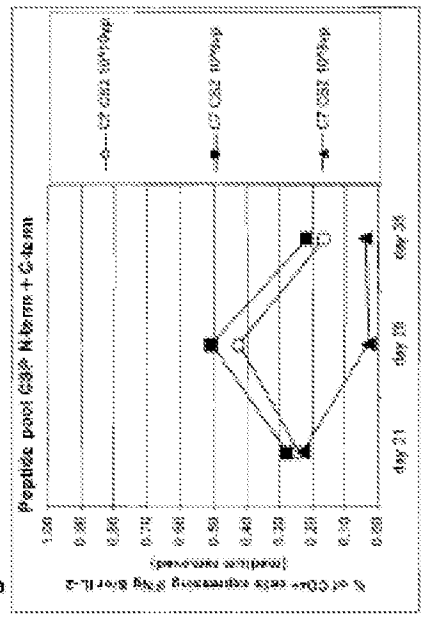


Figure 19

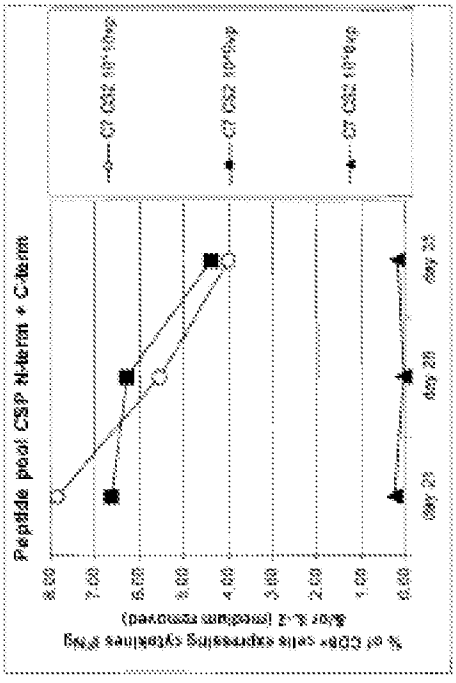


Figure 20

Figure 21

Figure 22

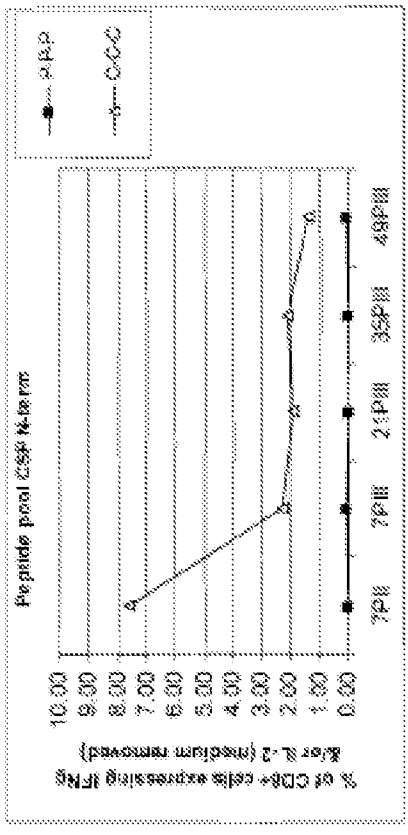


Figure 23

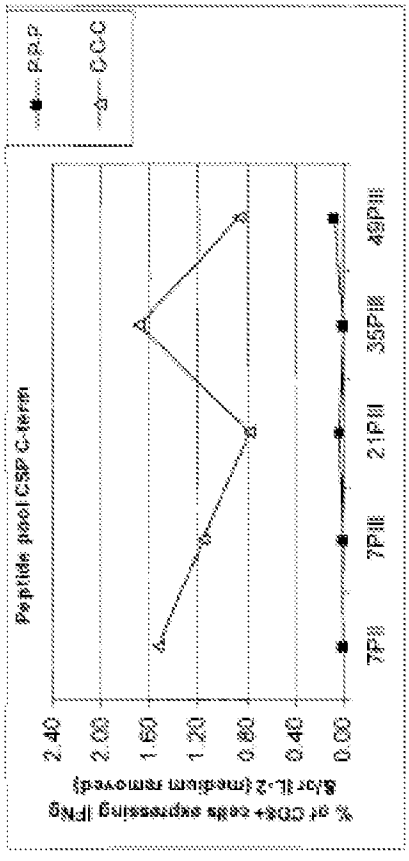
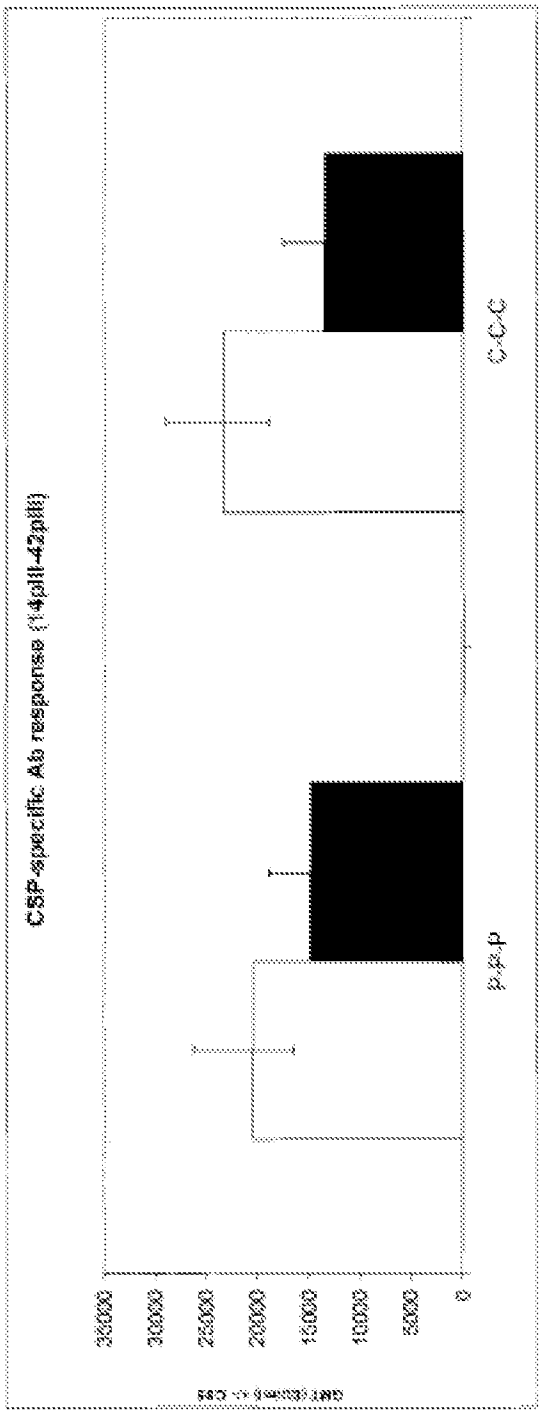


Figure 24


CSP-specific Ab response (14pIII-42pIII)
35000
30000
25000
20000
15000
10000
5000
0
p-p-p
C-C-C

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2008/052448

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07K14/16 C07K14/445 C12N15/861 A61K39/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C07K A61K C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, EMBASE, BIOSIS, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/110482 A (ISIS INNOVATION [GB]; HILL ADRIAN [GB]; MOORE ANNE C [GB]; NICOLL CLAI) 23 December 2004 (2004-12-23) the whole document	1-15,19, 28, 34-38,40
Y		16-18, 20-27, 29-33
Y	WO 02/22080 A (MERCK & CO INC [US]; EMINI EMILIO A [US]; YOUIL RIMA [US]; BETT ANDREW) 21 March 2002 (2002-03-21) page 22, lines 4-17 the whole document	16-18
Y	WO 2006/120034 A (GLAXO GROUP LTD [GB]; ERTL PETER FRANZ [GB]; TITE JOHN PHILIP [GB]; VA) 16 November 2006 (2006-11-16) the whole document	16-18, 20,22

-/--

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 May 2008	16/06/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Irion, Andrea

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2008/052448

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2006/013106 A (GLAXOSMITHKLINE BIOLOG SA [BE]; ABRECHT HELGE [BE]; DELCHAMBRE MARTINE) 9 February 2006 (2006-02-09) the whole document	20,21, 29-33
Y	WO 2007/003384 A (GLAXOSMITHKLINE BIOLOG SA [BE]; COHEN JOSEPH D [BE]) 11 January 2007 (2007-01-11) the whole document	23-27, 29-33
Y	GANNE V ET AL: "Enhancement of the efficacy of a replication-defective adenovirus-vectored vaccine by the addition of oil adjuvants" VACCINE, BUTTERWORTH SCIENTIFIC. GUILDFORD, GB, vol. 12, no. 13, 1 January 1994 (1994-01-01), pages 1190-1196, XP002393618 ISSN: 0264-410X the whole document table 1	32

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2008/052468

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 1-7, 9-34, 39, and 40 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

2. [ ] Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. [ ] Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. [ ] As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of additional fees.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

[ ] The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

[ ] No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2008/052448

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004110462 A	23-12-2004	US 2006240039 A1	26-10-2006
WO 0222080 A	21-03-2002	AU 9456201 A	26-03-2002
		CA 2422882 A1	21-03-2002
		EP 1320621 A2	25-06-2003
		JP 2004508064 T	18-03-2004
WO 2006120034 A	16-11-2006	AR 053275 A1	25-04-2007
		AU 2006245920 A1	16-11-2006
		CA 2608316 A1	16-11-2006
		EP 1880012 A1	23-01-2008
		KR 20080021659 A	07-03-2008
		NO 20075648 B	07-02-2008
WO 2006013106 A	09-02-2006	AR 050102 A1	27-09-2006
		AU 2005268856 A1	09-02-2006
		BR PI0514108 A	27-05-2008
		CA 2575898 A1	09-02-2006
		CN 101035897 A	12-09-2007
		EP 1773999 A2	18-04-2007
		JP 2008507987 T	21-03-2008
		KR 20070041765 A	19-04-2007
		US 2007243203 A1	18-10-2007
WO 2007003384 A	11-01-2007	AR 055069 A1	01-08-2007
		AU 2006265329 A1	11-01-2007
		CA 2613057 A1	11-01-2007
		EP 1896060 A1	12-03-2008